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ORIGINAL ARTICLES.

REPORT OF A CASE OF INDIGENOUS PARASITIC CHYLURIA WITH FILARIA NOCTURNA IN THE BLOOD.[1]

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Fanny B., married, aged twenty-nine, was born in Columbia, S. C., and spent the first twenty-seven years of her life in that town. Her twenty-eighth year was passed in Palatka, Fla., and her twenty-ninth in Philadelphia, where she arrived in March, 1895. Her father died from sunstroke, and her mother, for several years before her death, suffered from "shingles"—herpes circinnatus.

She had the usual diseases of childhood, except scarlatina. At the age of twelve she fell from a fig-tree, and soon after developed a large abscess in the left lumbar region, the site of which is plainly indicated by a cicatrix about three inches long, a little above and parallel with the posterior portion of the crest of the ilium. This abscess continued open for several months, but finally healed. A year after its closure another abscess appeared in the left iliac region, and also pursued a chronic course. Its site is indicated by a linear cicatrix, about two inches long, a little above and parallel with Poupart's ligament. The patient suffered from what she vaguely described as an attack of malarial fever in March, 1895, but never manifested any signs of malarial infection while in the South. She has had two miscarriages: one at four months and a half; the other at two months. Both were ascribed to persistent vomiting. Three weeks before her admission to the Woman's Hospital of Philadelphia—she was admitted on February 16, 1896—she gave birth to a child at term. The labor was natural in all respects. Previous to the birth of her child she suffered from pain in the region of the kidneys. On the second day of her lying-in this pain became intense and continued for a week, when it abated somewhat. On admission it was still complained of. On the third day of her lying-in she passed milky urine, and had difficulty in micturition on account of the occlusion of the urethra with what she regarded as stringy masses of mucus. There were, in reality, coagula of lymph and blood. The urine, after standing for several hours in a narrow, cylindrical vessel, separates into two portions, of which the lower is distinctly hemorrhagic; while the upper, has the appearance of milk or cream. Floating on the upper chylous layer are numerous coagula of a delicate, pinkish hue, and almost translucent, while at the the bottom, are a few small blood clots. A little of the urine was shaken up in a test tube with ether and set aside until the urine and ether had separated. The latter being then evaported on a watch-glass, a distinct deposit of fat was obtained. The chylous urine contained a trace of albumin, but no sugar, and was free from casts.

I found this woman awaiting me at my clinic at the Woman's Hospital on Tuesday, February 18, 1896, and lectured upon her case as one of chyluria, probably parasitic. On the evening of February 19th I visited the hospital for the purpose of examining my patient's blood for the filaria sanguinis, taking with me a small microscope and making the search with a half-inch objective. I withdrew the blood from the finger about 10 P.M., and examined several slides without finding the parasite. I left the slides at the hospital, and after my departure one of the resident physicians, Dr. Ida E. Blackburn, examined them with a stronger lens, and fortunately succeeded in detecting the filaria. Since then filariæ have been found in almost every slide examined. They are not numerous, the maximum number observed on a single slide being five. The urine was repeatedly examined, the centrifugal machine being used to separate the parasites, but only on one occasion were they found in that fluid. With the specimen in which they were detected the centrifugal machine was not employed. The filariæ have not been found in the milk of the mother or in the blood of the infant, and they are very few in number or absent from the blood of the mother during the day. The variety present in this case is, therefore, the filaria nocturna, the embryo of an adult which is alive in one of the lymphatic channels.

The patient was put to bed, and frequent examinations were made of her blood and urine. She was at first placed upon quinin and ergotin, without any apparent effect, the urine continuing chylous and bloody, although in an intermittent manner. February 25th, I examined the blood, and found filariæ. I then directed leeches to be applied to the lumbar region, ostensibly to relieve pain, but in reality to test the question whether the leech might play the rôle of an intermediate host to the filariæ. Three of the leeches were sent to me the next morning. I opened one of the leeches at 10 A.M., and examined its blood. Filariæ were abundantly present—one slide contained six—and actively moving. The next morning (February 26th) they were still active. The same afternoon I found three dead filariæ on one

[1] Read at the meeting of the Association of American Physicians, at Washington, D. C., May 1, 1896.

of the slides, and but one still living and languidly moving. At the same hour the filariæ removed directly from the body were all living. On February 29th I opened another leech, and found a number of dead filariæ in its blood—none living. It appears evident, therefore, that although the filariæ may live many hours in the body of the leech, that animal does not play the part of an intermediary host to them.

February 28th, the patient was placed upon thymol (gr. ii. every three hours), and coincidently with its administration, the urine became normal in every respect, and so continued for seven days, when it again became chylous and bloody. The filariæ during this interval were abundantly present in the blood.

March 12th, I ordered methylene blue in two grain capsules every three hours, being induced to do so by the remarkable statements of Dr. Austin Flint, concerning the efficacy of this substance in a case of parasitic chyluria.[1]

March 13th, I found Mrs. B. out of bed and dressed. Her appearance was good, her lips and cheeks being well-colored; urine deep blue; eye-ground examined by Dr. Gertrude A. Walker, ophthalmologist to the hospital, who confirmed my observation as to the abscence of any morbid appearance in the retina. Patient anxious to go home, but persuaded to stay another week.

On Saturday evening, March 14th, I obtained some blood from the finger as usual, and examined it the next morning. I had scarcely placed the first slide under the microscope when I detected two filariæ (in the same field) moving with the greatest activity. I was unable to perceive that the filariæ were stained in the slightest degree by the methylene blue which the patient, at the time the blood was withdrawn, had been taking continuously for seventy-two hours. Her urine and feces were stained a deep blue, but *the milk was uncolored.* Thus far I find no corroboration of Flint's statement that methylene blue stains the filariæ in the circulating blood, much less that it exerts any deleterious influence upon them. My experience, although differing from that of Flint, in this matter, is precisely in accord with that of Laveran,[2] who found that the filaria perished a few seconds after it was brought into contact with a drop of a solution of quinin, of the strength of 1–1000, while methylene blue (strength of solution not stated) does not hasten their death, and does not stain them until they are dead.

March 17th, Mrs. B. came downstairs to my clinic at the Woman's Hospital; specimen of her urine, deeply stained with methylene blue, exhibited. Blood was withdrawn from her finger at one o'clock, and seven slides prepared. These were repeatedly examined by myself and an assistant, the result being that two filariæ were found in the seven slides. This is the third time in which the blood has been examined by day, namely, once before at one o'clock, when no filariæ were found, and once at 8 A.M., when only one was discovered. It is evident that the parasites are much less numerous in the superficial capillaries by day than by night. This is the sixth day since the treatment with methylene blue was instituted, and the results, thus far, are by no means encouraging. The drug appears to be absolutely inert, so far as concerns the destruction of the filariæ. Different opinions as to whether or not the filariæ were stained, were expressed by those who saw the specimens. The majority thought they were not, but being on the lookout for such staining, I *fancied* that they had a faint bluish tinge.

March 19th, at one o'clock, the patient having been taking methylene blue (two grains every three hours) for one week, I counted the blood corpuscles. Number of red corpuscles per cubic millimeter, 4,100,000; white not increased in number and *unstained.* Hemoglobin, sixty-five per cent.

Five slides of rapidly dried blood were prepared, and no filariæ found. It is a singular fact that the previous day, while the patient was taking the methylene blue as usual, the urine suddenly became quite clear and macroscopically normal.

I gave two slides of blood to Dr. Alfred Stengel, of the Pepper Laboratory of Clinical Medicine (University of Pennsylvania), in order to obtain his opinion as to whether or not the leucocytes were stained with the methylene blue, which the patient had been taking continuously in full doses for more than one week at the time the blood was withdrawn. Dr. Stengel reported that he could find no evidence of blue discoloration of the corpuscles.

March 20th, at nine o'clock in the evening, I prepared a number of slides. The filariæ were abundantly present. I found them in eighteen out of twenty-one preparations, and, as I did not use a mechanical stage, it is possible that I may have overlooked them in the three slides, in which the search was ineffectual. The serum of the blood was decidedly blue, and the filariæ of an exceedingly delicate bluish tinge. The methylene blue had been taken by the patient continuously in full doses for nine days and had proved absolutely inert, so far as any influence upon the vitality of the embryos is concerned.

March 21st, the patient returned to her home.

I omitted to state that shortly after the patient's admission I had her vaccinated on the theory that an intercurrent infection might destroy the parasite. The vaccination was perfectly successful, but quite as useless from a therapeutic standpoint as the methylene blue.

The above case is of special interest both because it is the first of the kind observed in Philadelphia, and also for the reason that it adds another to the list of those indigenous to the United

[1] *New York Medical Journal*, June 15, 1895.

[2] *Bulletins et Mémoires de la Soc. Méd. des hôpitaux de Paris*, 3 série, tome x, p. 738.

States. It is impossible to say how long the filarial embryos have been circulating in the blood of this patient, but it is in the highest degree probable that the infection occurred either in South Carolina or Florida, and it is not impossible that the lumbar and inguinal abscesses, from which she suffered at the age of twelve, were due to the filariæ. Similar abscesses form part of the clinical history of filariasis. The exciting cause of the chyluria was probably the rupture of a dilated lymphatic during the expulsive pains of labor. The supposition that infection occurred at the age of twelve or earlier necessarily implies the circulation of the embryos in the blood for many years without giving rise to symptoms. In connection with this question of the innocuous presence of the filariæ in the blood of men the following case is of interest:

In the autumn of 1893, a well-known physician of Philadelphia consulted me about his son-in-law, who had resided for some years in Columbia, S. C., and latterly near Tampa, Fla. Filariæ were said to have been found in his blood by de Saussure of Charleston. Up to the time I speak of the symptoms had been those of intestinal indigestion, consisting chiefly of great abdominal distress, meteorism, irregular action of the bowels, great nervous excitement at times, *especially toward evening*. I examined the patient's blood in vain for the filariæ, and Professor Guiteras, who examined it twice, was equally unsuccessful. The time of my examination was about 10 P.M., and I have since thought that my failure to detect the parasite may have been due to the fact that the patient walked to my office. The gentleman in question returned to his home in Florida, and a few months later passed chylous urine for the first time. The chyluria continued for one or two months, and has not returned. Of late the patient has been in a fair state of health, and free from the intestinal symptoms above-mentioned.

Post-mortem examination, of those who have perished from parasitic chyluria, has revealed enormous distention of the lymphatic vessels of the urinary tract, and sometimes also of the thoracic duct. A few months ago, I exhibited before the Philadelphia County Medical Society a specimen of chyluria from a Cuban, whose blood I vainly searched for the filaria. I had but one opportunity of examining the blood of this man, and for that I was indebted to Dr. Charles W. Coburn, who was in attendance upon the case. Shortly after my examination the man died and an autopsy was held under very unpropitious circumstances. There was, however, no difficulty in ascertaining that the lymphatic vessels, especially those of both renal regions, were enormously dilated and convoluted, many of them being of the caliber of an ordinary lead pencil. The dilatation was most marked on the right side, and in the pelvis of the corresponding kidney there was a pale lymph clot similar to the coagula passed with the urine during life. In this case it is greatly to be regretted that a careful dissection with a view to the detection of one or more of the adult filariæ was not possible. The time at our disposal was limited, and the light was derived from a single lamp which was held by turns by Dr. Coburn and myself, the autopsy being skilfully performed by Dr. Bundy of the Woman's Medical College of Pennsylvania.

The importation of a case of filariasis into a city of the latitude of Philadelphia naturally raises the question whether the disease may become endemic therein, and there seems to be no good reason why it should not. The brilliant researches of Dr. Patrick Manson have established the fact that the mosquito plays the part of an intermediary host in conveying the *filaria nocturna* from man to man. At night the embryos swarm to the surface, while during the day they retire to the deeper vessels. Acting upon this knowledge, Manson exposed a filaria patient to the bites of mosquitos, and found the embryos in the bodies of these insects, in which, in the course of from five to seven days, they attain a length of one-fifteenth of an inch. In the blood of man, they measure from $\frac{1}{70}$ to $\frac{1}{80}$ of an inch, and are enclosed in a sheath, from which they make their escape in the viscid blood of the mosquito. The mosquitos with the embryonic filariæ in their interior seek water in which to deposit their eggs. This function accomplished, they perish; the embryonic filariæ are liberated, and, through the medium of the water in which they exist, gain access to the human system. One or more of the ingested parasites attains maturity in the lymphatic system and continues for an indefinite period (in some cases for many years) to produce swarms of embryos. The latter being but $\frac{1}{300}$ of an inch in diameter, readily traverse the lymphatic glands, and reach the blood vessels via the thoracic duct. It is through the plugging of the lymphatic vessels, especially those connected with the urinary tract, that the lymph and chyle become mingled with the urine. For further details concerning the life history of this parasite, and the mode in which it occludes the lymph channels, the reader is referred to the writings of Manson.[1]

[1] Especially the articles in Davidson's "Hygiene and Diseases of Warm Climates"; *International Clinics*, April, 1895; "Transactions of the International Congress of Hygiene and Demography," Seventh Congress, 1891.

In Philadelphia, mosquitos are abundantly present during the summer and autumn, and have convenient access to the Schuylkill River, from which our water supply is derived. The chance of a given individual becoming infected through the medium of a river of the volume of the Schuylkill is doubtless infinitesimal, but no one acquainted with the wonderful vitality of the embryonic filaria can deny its possibility. The surest safeguard against this and other sources of infection is filtration.

The *filaria nocturna* is now known to be indigenous in Europe, as appears from the report of a case recently studied by M. Font of Spain.[1] The patient was a man, thirty-five years of age, who had resided all his life at Canet de Mar, with the exception of a short period passed at San Sebastian and Vitoria. Canet de Mar is a town of 5000 inhabitants on the shore of the Mediterranean, in latitude 41° 37′ north, between Barcelona and the French frontier, and is a favorite retreat for veteran sailors, many of whom have visited the West India Islands. Dr. Ballester, in a communication to Font, reports having seen in the same town two cases of hematochyluria during fourteen years, in neither of which was there an examination of the blood. In Font's case the presence of the *filaria nocturna* was repeatedly demonstrated.

Thus far three species of filaria have been certainly detected: (1) *Filaria diurna*, (2) *Filaria nocturna*, (3) *Filaria perstans*. These names are indicative of the habits of the animal, the *filaria diurna* being found in the superficial vessels solely or chiefly during the day; the *filaria nocturna* solely or chiefly during the night; while the *filaria perstans* is constantly present in the capillaries of the integument. The *filaria diurna* and the *filaria perstans* are confined, thus far, to the west coast of Africa and adjoining districts; while the *filaria nocturna* is pandemic in the tropics and endemic in certain sections of the United States. The adults of *filaria nocturna* have been frequently found; that of *filaria perstans* never, so far as I have been able to ascertain. In the opinion of Manson, the *filaria loa* of the eye of the negro of Old Calabar is probably the adult form of the *filaria diurna*. If it is not, he argues, then there must be another blood worm yet to be discovered, for the embryos of the *loa* must escape from the body of their host through the medium of the circulation. The *filaria perstans* has been practically proved by Manson to be the cause of the fatal "sleeping sickness" of the Congo region.

While engaged in writing this article my attention was called by Dr. Charles A. Oliver of Philadelphia, to a remarkable case of *filaria loa*, recently reported by Dr. Argyll Robertson. The patient was a lady who had spent eight years in missionary work at Old Calabar on the West coast of Africa. Without entering into the details of this interesting case I will merely state that in two successive operations Dr. Robertson extracted two *filariæ* (variety *loa*) from the ocular tissues, the first a male, the second a female. Both of these adult parasites are described by Manson in the course of Robinson's paper. The female was stuffed with embryos, but repeated examinations of the blood failed to detect any embryonic filariæ in that fluid. The latter fact certainly seems to refute Dr. Manson's hypothesis that the *filaria loa* is the adult form of the embryonic *filaria diurna*.

In a letter recently received from Dr. Manson, he says that America possesses the

"unenviable distinction of possessing a filaria of the blood, which is possibly peculiar to itself. I found it in negroes from the island of St. Vincent, and I have little doubt but that it could be found in the negroes of the more tropical States of the Union. This filaria I have named *Filaria Demarquayi*, after Demarquay, the discoverer of *filaria nocturna*. It is a very small worm, not half the size of the filaria you are familiar with. It observes no periodicity; it is sharp-tailed, and it possesses a sheath," etc.

This *Filaria Demarquayi*[1] should, therefore, be added to the list above given, so that, at the present time, there are four distinct varieties of *filaria sanguinis hominis*.

The steps by which our present knowledge of the *filaria nocturna* has been obtained were gradual. The embryo was first discovered by Demarquay in 1863 in the liquid of a chylous hydrocele; next, in the blood by T. R. Lewis of India, in 1872. In 1876, the adult parasite was found in a lymphatic abscess of the arm by Bancroft of Brisbane, Australia, and is accordingly, known to helminthologists as the *filaria Bancrofti*, this name having been assigned to it by Cobbold. Finally, our knowledge of the life history of the parasite has been completed by the genius of Manson. We are irresistibly reminded of the analogous history of the discovery of trichiniasis, with which the names of Hilton, Paget, Owen, Leidy, and Zenker are associated.

In the United States filariasis can no longer be

[2] *Revista de Ciencias Medicas de Barcelona*, 25 February, 10 Marzo, 1894.

[1] I would suggest that the last-mentioned parasite would be much more appropriately called *filaria Mansoni*.

considered as an extremely rare disease, and it is probable that it is more prevalent in certain of our Southern States than is suspected. Professor John Guiteras, of the University of Pennsylvania, was the first to demonstrate the existence of endemic parasitic chyluria in this country,[1] and de Saussure[2] of Charleston, has published the clinical histories of twenty-two cases of filariasis observed in Charleston, S. C., from 1886 to 1890. Two cases of filariasis indigenous to Virginia have been reported by Dr. R. M. Slaughter,[3] but in neither of them was the blood examined. In both there was hematochyluria and filariæ in the urine, and in one filariæ were found in the pus of an alveolar abscess. While I believe these cases of Dr. Slaughter to be genuine examples of filariasis, I cannot refrain from the criticism that the illustration accompanying his paper bears but a superficial resemblance to the embryonic *filaria nocturna*.

Another indigenous case is reported by Dr. C. W. Mastin of Mobile, Ala.,[4] the patient being a young man, age twenty-two, who had never been outside of Mobile and its immediate vicinity. In Mastin's case the filarious lesion was a chylous hydrocele. The filaria is also said to be have been found by Weiss in the urine of a child who had never been out of Illinois.[5] I am by no means sure that I have collected all the reported cases of indigenous filariasis; in fact, I have made no attempt to do so. Sufficient, however, has been said to show that the disease is widespread and not confined to tropical and sub-tropical regions.

In this connection I may remark that the embryonic *filaria nocturna* is capable of great resistance to cold. My slides, prepared in winter and kept in a cold room, showed the parasites active at the end of six or seven days; in fact, one lived for ten days. Exposure for many hours to a freezing temperature does not kill them, as proved by one of the methods employed by Manson to demonstrate "filarial ecdysis." This consists in placing the slide containing the filariæ upon a block of ice overnight, in order to cause a separation of hemoglobin from the red corpuscles. The effect of this degree of cold is to render the movements of the animal somewhat languid, but after withdrawal from the ice they become as active as before, and the embryos speedily escape from their sheaths.

[1] MEDICAL NEWS, April 10, 1886.
[2] MEDICAL NEWS, June 28, 1890.
[3] MEDICAL NEWS, September 5, 1891.
[4] *Annals of Surgery*, 1888, vol. 8, p. 320.
[5] *American Text Book of the Diseases of Children*, Starr.

Facts such as the above seem to prove that nothing but time is needed for filariasis, the scourge of certain tropical countries, to become prevalent in our own, and demonstrate the vital importance of municipal filtration of our water supply.

I have said little about treatment in the foregoing remarks because I do not believe there is any drug capable of destroying adult filariæ in the human system. Surgeon-major E. Laurie of Hyderabad, reports two cases which he believed to have been promptly cured by thymol,[1] the maximum dose being five grains twice daily. Walsh, of the general hospital of Calcutta, also reports success from the use of thymol. On the other hand, Crombie, of the same institution, has given two hundred grains of thymol daily in one case, and forty-five grains daily in another, without producing any effect upon the worms. As the latter justly remarks, "thymol is so exceedingly insoluble that it is improbable that any appreciable quantity of it left the intestinal canal."[2]

I consider it a very fortunate circumstance that the case of Fanny B. came under my observation at a time when I was able to secure the co-operation of such an expert in photomicrography as Dr. Charles Lester Leonard, whose arduous work has been pursued in the Laboratory of Hygiene of the University of Pennsylvania. The appended illustrations are all *photographs of the living parasite*, and this is, I believe, the first time in which the living filaria have been photographed under a one-twelfth oil immersion lens, or, so far as I am aware, under any. The representations are, therefore, absolutely accurate, and necessarily take precedence of any drawings of the living or photographs of the dead nematode. To show the fallacy of drawings, I may say that one artist pictured the worm with long cilia waving from its head, while another was unable to see anything of the sort in the same specimen. I may say, in this connection, that I am inclined to believe in the existence of such cilia, although they are not shown in the photographs; unless they are indicated by the blur in Fig. 5. The point I wish to emphasize is that nothing can be represented in the photographs that was not present at the time they were taken.

I may say also that I have been unable to detect the "cephalic armature" described by Manson, although the "pouting" movement of the head was plainly visible. In mentioning my inability to detect the cephalic spine, or fang, I have no intention to impugn the accuracy of

[1] *Lancet*, February 14, 1891.
[2] *Lancet*, August 13, 1892.

Manson's description. I attribute my failure entirely to my deficient training in this line of research.

In conclusion, I wish to express my thanks to Dr. Anna M. Fullerton, the distinguished physician in charge of the Woman's Hospital of Philadelphia, and to her assistants, Drs. Blackburn and Carpenter, for their kind and skilful co-operation with me in my study of this interesting case.

Postscript.—I visited Fannie B. at her home on March 25th, and found her in good condition. she informed me that since leaving the hospital, her baby's feces have been stained blue. She is taking ten grains of methylene blue daily—two grains every three hours.

March 28th, patient's milk now faintly stained blue. Treatment continued,

March 29th, visited the patient this evening and prepared eleven slides, in every one of which I found filariæ in most active movement. She has now been taking methylene blue since March 12th. From the 12th until the 21st, the dose was two grains every three hours—sixteen grains per diem—and from the 21st until the 29th, it has been ten grains a day, in divided doses of two grains. The drug, in this case, has proved absolutely inert. The patient's urine is deeply stained, and her milk very slightly stained. The baby's fecal discharges are blue, and his urine also of a faint bluish tint. Filariæ of a very faint bluish tinge. Leucocytes unstained. A few filaments of cotton on the different slides were stained of a faint bluish tint by the blood plasma with which they were in contact.

From the above it is manifested that my experience with methylene blue in parasitic chyluria is entirely different from that of Austin Flint and Joseph N. Henry.[1]

The latter in his report to Flint says:

"The effects of methylene blue in this case were decided and prompt. After the administration of two grains every two hours during the day on March 5th, the parasites were very few at 11 P.M.; the only two found were deeply stained with blue, and their movements were extremely sluggish, the urine being clear but intensely blue. On the fourth and seventh days no parasites were found, although the treatment had been discontinued after the first day. On the eighth day, the urine became milky, and on the night of the ninth day, filariæ were found in great number, but their movements were not very active. On the tenth day, the treatment was resumed, and continued for five days. Three days after, the blood being examined at night, a very few motionless filariæ were observed. Since that time and up to the present writing, the urine has been normal and the patient has been restored to perfect health."

Admitting the disappearance of the parasites in Joseph N. Henry's case, I believe it to have been a mere coincidence and in no way related to the administration of methylene blue. I have given this drug in larger doses than were used in the case reported by Flint, and for a much longer period, without the slightest effect upon the parasite.

[1] *New York Medical Journal*, June 15, 1895.

EXPLANATION OF THE ACCOMPANYING PLATE.

FIG. 1.

The movement of a single filaria during a series of four successive instantaneous exposures. The length of each exposure was one-fifth of a second, the entire series occupying less than five seconds. The magnification is to eight hundred diameters, with a Zeiss one-twelfth homogeneous immersion lens.

FIG. 2.

Filaria alive in the blood. Instantaneous photomicrograph. Four hundred diameters magnification. Four millimeters Zeiss apochromatic.

FIG. 3.

The same as Fig. 2. Magnified to fifteen hundred diameters. Showing structure and commencing granular degeneration.

FIG. 4.

Tail of filaria showing sheath extending beyond the apparent end of the tail. Eight hundred diameters.

FIG. 5.

Head of living filaria. The blur in front of the head is probably due to the motion of cilia. Fifteen hundred diameters.

FIG. 6.

Shows the head of a filaria overlapping a red corpuscle. The appearance might readily be mistaken for the cephalic end of a sheath. Magnified eight hundred diameters.

THE USE OF THYROID EXTRACT IN CONDITIONS OF LOWERED VITALITY OTHER THAN CRETINISM AND MYXEDEMA.

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THE very remarkable results obtained by Professor Schiff and Dr. Van Eiselsberg by implantation of portions of the thyroid gland in the bodies of animals upon which thyroidectomy had been performed, inspired Mr. Victor Horsley[1] with the idea that myxedema in man could also be so treated.

The suggestion made by Mr. Horsley was acted on by Lannelongue in Paris and Bettencourt and Serrano[2] in Lisbon, who undertook the actual implantation of the sheep's thyroid beneath the skin of the human subject for the relief of myxedema.

Later injections of fresh thyroid juice were practised with success for the relief of the above disease by Messrs. George R. Murray[3] and Hurry Fenwick.[4]

Feeding with fresh sheep's thyroid glands was found by Dr. Hector W. G. Mackenzie[5] to give equally good results and finally various preparations, liquid and solid, of an extract of the fresh sheep's thyroid have been used.

[1] *British Med. Journal*, February 8, 1890.
[2] *La Semaine Médicale*, August 13, 1890.
[3] *British Med. Journal*, October 10, 1891.
[4] *Ibid.*
[5] *British Med. Journal*, October 29, 1892.

Fig 1.

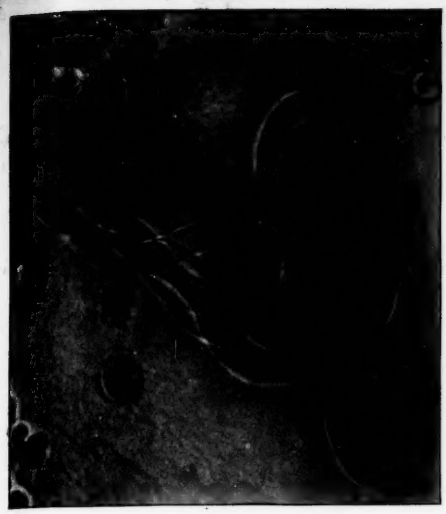


Fig. 4.

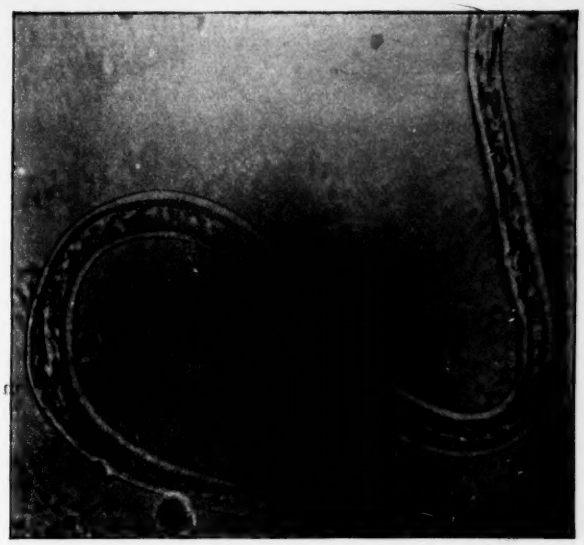


Fig 2.

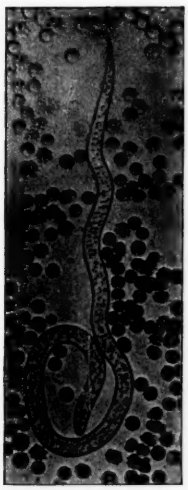


Fig. 5.

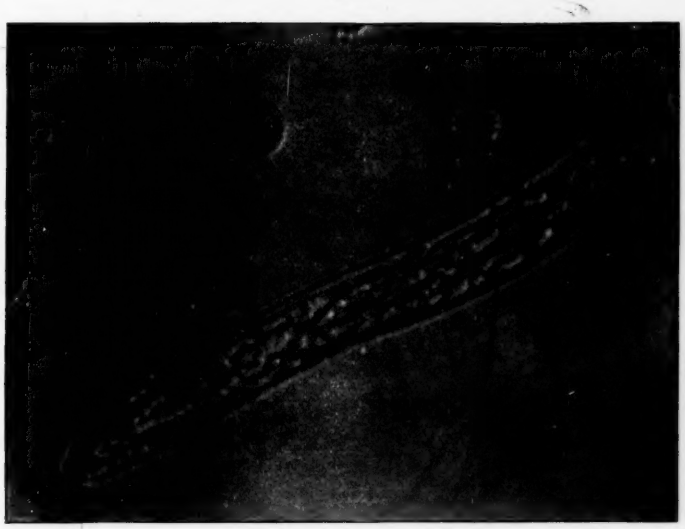
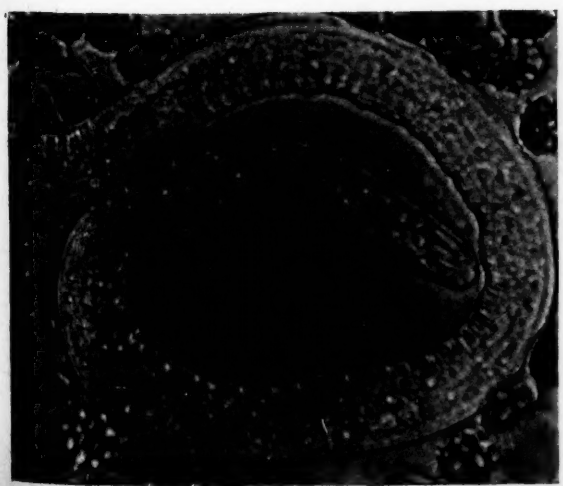
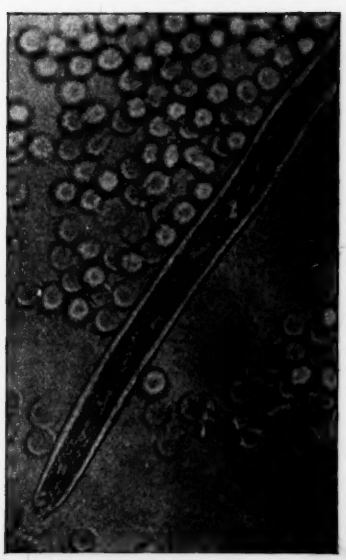


Fig. 6.

Fig. 3.





INDIGENOUS PARASITIC CHYLURIA WITH FILARIA NOCTURNA IN THE BLOOD.

Having observed desquamation of the skin, especially on "the palms of the hands and soles of the feet" resulting from the administration of thyroid juice "in all cases of myxedema and sparodic cretinism, in which he had the opportunity of carefully following the effects of the treatment;" Dr. Byrom Bramwell[1] decided to try thyroid feeding in the treatment of psoriasis, and, in three cases (one of six and a half years' duration) the treatment was entirely successful.

Since that time many practitioners have tried the remedy for psoriasis and other forms of skin disease and also in secondary syphilis.

Dr. J. Duncan Menzies[2] reported marked improvement after the administration of thyroid extract in four cases of "malignant Indian syphilis," which had been slightly, if at all benefited by the usual anti-specific remedies. Dr. P. S. Abraham, at a meeting of the Hunterian Society of London, in 1894, presented a case of lupus, which had been greatly benefited by the treatment. The same observer reported at a meeting of the Medical Society of London the effects of thyroid feeding on sixty-five cases of psoriasis. In only eighteen of these cases, however, was there marked improvement; in fifteen there was an actual increase in the eruption, and in twenty-eight "headaches, palpitations, tremors, neuralgic pains, dyspeptic symptoms, in short the various manifestations" of "thyroidism" were so soon complained of that the treatment had to be discontinued. He concludes that the treatment "has no constant effect in psoriasis." Numerous other observers have reported either negative or positively unfavorable results from the injection of the thyroid gland, or its extract, in cases of psoriasis.

The following single case appeared to me of sufficient interest to put on record, from its confirming the already published reports of the marked effect sometimes observed in the nutrition of the skin, in consequence of thyroid feeding. It will be observed that while the results obtained might at first have been attributed to the local measures adopted, in conjunction with the injection of the thyroid extract, the equally favorable result observed later, when no local treatment was used is evidence that the cure was largely due to the thyroid feeding.

Mrs. Mary F., aged forty-seven, consulted me March 6, 1895, on account of an ulcer in the sole of the right foot, from which she had suffered for four years. No history of previous illness. Patient suspected herself that the disease was due to infection from a child she had nursed, but as no history could be elicited of ulceration in other regions, or of other signs of constitutional infection and her youngest child (the ninth) was apparently perfectly healthy, I was inclined to look upon the case as one of simple ulceration caused by pressure. The ulcer was circular and rather superficial and covered with adherent crusts, in the removal of which its surface was found to be covered with small indolent granulations. Around the ulcer the skin was thickened and eczematous.

Ordered five grains of dried thyroid extract daily, dose to be increased in ten days to ten grains daily. March 31st, for the last ten days patient has been taking ten grains daily. The ulcer has changed decidedly in appearance, the edges being more ragged, but its surface is covered with larger and more luxuriant granulations. Drew the edges of the ulcer together with narrow strips of adhesive plaster and dressed with two per cent. carbolized water and dusted with equal parts of salicylic acid and zinc oxide powder. Patient says that she suffers occasionally from nausea after taking the extract, but she presents no symptoms of thyroidism, so the dose of the dried extract was increased to twenty grains daily. For the relief of constipation from which she complains a laxative pill was ordered.

April 21st.—Marked improvement; the ulcer now showing evident signs of healing. Twenty grains of the extract having caused symptoms of thyroidism, *i.e.*, faintness and excited action of the heart, patient had been obliged to reduce the dose of the extract, and for the past week has taken from two to three 5-grain tablets daily.

June 25th.—Soon after last visit ulcer healed entirely, and the skin of the foot became perfectly smooth, A week or two ago, however, the skin became again slightly ulcerated and an eczematous eruption appeared on the ring finger of the right hand. Ordered ten grains daily.

April 12, 1896.—Patient reports that for one month after her last visit she took daily the dose then ordered. At the end of that time she found that the ulcer had entirely healed and she has had no recurrence of it. It may be interesting to note that the patient, a very stout woman, has during the somewhat prolonged thyroid treatment, to which she has been subjected, observed none of the loss of weight, which has sometimes been observed as the result of thyroid feeding.

[1] Sixty-first Annual Meeting of the British Medical Association, *British Medical Journal*, October 28, 1893.
[2] *British Medical Journal*, July 7, 1894.

ROMAN FEVER is almost a thing of the past. From 650 in 1881, the deaths from malaria ran down to 254 in 1891, while for the last five years the average has been 149, the number in 1895 being 125. These figures are all the more significant in that the population of Rome has increased from 300,000 to 467,000 in fifteen years. An equally remarkable diminution has taken place in the death rate for all other infectious diseases, so that Rome, even in the traditional unhealthy season, is one of the most healthy capitals in Europe.

THE SURGICAL TREATMENT OF ROUND ULCER OF THE STOMACH AND ITS SEQUELÆ, WITH AN ACCOUNT OF A CASE SUCCESSFULLY TREATED BY LAPAROTOMY.

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(Continued from page 462.)

Prognosis.—The mortality which has followed laparotomy for perforated gastric ulcer is thus far about seventy-one per cent. If what has already been said of the value of early diagnosis and prompt operation needs further emphasis, it finds it here; for the table shows that more than half of all the cases operated upon in the first twelve hours recovered, the mortality being thirty-nine per cent., while of those operated upon from twelve to twenty-four hours after perforation, seventy-six per cent. died; and of those who came to operation after the first day, eighty-seven per cent. succumbed.

Treatment.—If perforation be suspected, and until a diagnosis is arrived at, nothing should be given by the mouth. This also means that lavage should in no such case be resorted to. By neglect of this latter rule, rupture of a weakened stomach, and extravasation of gastric contents into the peritoneal cavity, have been known to occur in two cases in this city. Unfortunately, perforation often takes place when the stomach is full. If such a condition is recognized, and the diagnosis of perforation is made, surgical interference is the more imperative. If in doubt, therefore, the patient should be kept quiet and in a horizontal position. If the symptoms of collapse or pain are urgent, such stimulants and anodynes as are needed should be administered by the rectum, or hypodermically, with the employment of external warmth, etc.

For the required laparotomy the incision is best made in the median line, and should be an ample one, that is to say, three to five inches long. If more room is required it can readily be obtained by a crosscut through either the right or left rectus muscle. An incision to the left of the median line has been advocated,[1] in order to render more accessible the cardiac end of the stomach. This, however, is better determined after the exploration has been made through the median incision.

[1] Morse, *Lancet*, 1894, i, p. 672.

The liver is to be lifted up by the hand of an assistant or by broad retractors, and the stomach gently drawn downward, and to one or the other side. Gentle squeezing of the organ will often expose the perforation by the escape of gas or fluid. If nothing is seen on the anterior surface, the lesser omentum is to be torn through at a thin place near the stomach (to avoid the colonic circulation), and the posterior wall explored, as much as possible. With the aid of a sponge on a clamp, through this same opening, the recesses of this cavity can be reached to search for extravasated fluid.

If any recent adhesions exist about the perforation it is wiser to separate them, after protecting, as far as possible, the adjacent parts by gauze or sponges, and thus to find and to suture the gap than to trust to the fibrinous closure. The pressure of the finger-tip will temporarily occlude the opening in the stomach until the protecting pads are arranged, if this has not already been done, and will also aid in safely applying the first occluding sutures. In three of the cases recorded in Table I, such fibrinous adhesions were left undisturbed. Two of these cases died, and at autopsy it was seen that the fibrin obscured the perforation, but did not really close it. The third case recovered—a result which might have been true of all three, had sutures been applied.[1]

The excision of the ulcer has been advocated by some. On the other hand, it has been objected, with much reason, that this is unnecessary, that it takes valuable time, that it makes a larger and more difficult opening to close, and that hemorrhage follows, which is very detrimental to the patient, and is often troublesome to check. In only three of the twenty-three successful cases was the ulcer excised. Of the remaining twenty, seventeen were sutured, Lembert style, while two of the others were tamponed, suture being impossible, and in the other case the fibrinous adhesions were not disturbed.

Lavage, through the perforation, as some have practised it, is inadvisable. Lavage, but not hyperdistention, after the operation, by the usual method, is advisable, not only to empty the stomach thoroughly, but also to test the security of the stitches. The stomach should be left empty, to avoid vomiting and all strain on the suture.

[1] The search for a perforated ulcer is not always easily made, and often demands considerable manipulation and time. Too often, from the lateness of the operation, the patient's waning strength will forbid its thorough performance. Twice has it happened to me to be compelled to desist from further exploratory effort, and to find only at autopsy, the sought-for perforation.
R. F. W.

In twelve of the successful cases, irrigation of the peritoneal cavity was resorted to. In eight cases no irrigation was employed, but the peritoneum, when soiled, was cleansed with gauze. As regards the fluid used for irrigation, it was in three cases boiled water, in two cases a weak solution of carbolic acid, and in one case a solution of boric acid. In six cases the character of the fluid is not given. Concerning this practice, a safe rule would seem to be not to irrigate if the amount of escaped fluid is small. Sponging with boiled water will then suffice. If, on the other hand, much fluid has escaped, and the peritoneum has been extensively involved, the best chance for the patient lies in using large quantities of hot fluid, so as to wash clean every part of the peritoneum. For this purpose, sterilized salt solution, 0.6 per cent., at 105° F., is advisable, and in these cases special drainage posteriorly on both sides, and in the pelvis, is to be resorted to. Five successful cases were drained; in ten no drainage was employed.

DUODENAL ULCERS.

What has been said of perforating ulcers of the stomach, as to diagnosis and treatment, applies equally to acute perforating ulcer of the duodenum. Before an exploratory laparotomy, the two are practically indistinguishable. Perforating ulcer of the duodenum is confined almost exclusively to men, but it occurs in them at the same age as does perforating gastric ulcer, *i.e.*, from the twenty-eighth to the forty-fifth year. The perforation occurs, as will be seen from Table II., most frequently (seven out of nine cases) in the anterior wall of the bowel, and in but one case was there an associated abscess. This fact is an important one. Out of the nine cases, one survived, to die two months later from an intestinal obstruction from adhesions which resulted from the operation; while, in another case, a second operation was performed on the twenty-fifth day after the first one, to evacuate pus between the liver and diaphragm. The patient ultimately recovered.

In concluding this brief of the operative procedures for the relief of perforating gastric ulcers, let us strongly emphasize the fact, which is here established, that the happy result of operation is dependent more upon its early performance than upon any other factor. And with this in mind, it should be wholly unnecessary to urge again every physician to acquaint himself very fully with the early symptoms of such a perforation.[1]

[1] In addition to the references already given, an article by Gilford in the *Lancet*, 1894, i., p. 1369, and one by Kriege in the *Berl. klin. Wochenschr.*, 1892, p. 1280, give a good idea of the subject.

SUBPHRENIC ABSCESS.

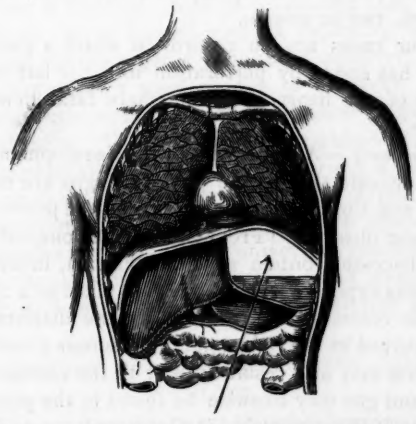
In quite another way, a gastric ulcer may perforate and cost the life of a patient, viz., by the formation of an abscess to the right or left of, or behind the stomach. To this condition several names have been applied, of which *subphrenic abscess* seems most likely to survive.

Etiology.—Subphrenic abscess may also arise from other than gastric lesions, and numerous cases have been reported as coming from diseases of the gall-bladder, liver, spleen, kidney, duodenum, and appendix. The etiology in some of these cases is questionable. Certainly, the stomach and appendix are responsible for the large majority of the abscesses that form under the diaphragm.

Penrose and Dickinson[1] state that of ulcers of the stomach only those cause abscess which are situated in the posterior wall; but others admit that an ulcer in the anterior wall, if near the cardiac orifice, may also give rise to an abscess. Weir has observed two cases in which an abscess formed between the stomach and spleen. In one of them the source of infection was a gangrenous appendix; in the other, an anterior perforation of the stomach.

Pathology.—The pus may be situated extraperitoneally,—which is rare, and is commonly then of renal origin,—or it may occupy some portion of the lesser peritoneal cavity, or be limited to the space between the cardiac end of the stomach, diaphragm, and spleen (or liver, if on the right side). It rarely breaks into the general peritoneal

FIG. 1.



Left-sided Subphrenic Abscess (containing gas). From Beck.

cavity, but progresses slowly, pushing up the diaphragm on the affected side, and frequently bursts into the pleural cavity or lung.

[1] Penrose and Dickinson, *Br. Med. Jour.*, 1893, i., p. 118.

Through the courtesy of Dr. A. J. McCosh, the following unpublished case of an anterior abscess from a gastric perforation is here inserted. The patient was operated upon by him in November, 1895, at the Presbyterian Hospital, and the perforation in the stomach successfully sutured.

A female, aged thirty, had obscure gastric symptoms for years, with occasional vomiting. The onset of perforation was not sudden, but there was slowly increasing epigastric pain and tenderness, lasting for five or six weeks, with constipation, moderate tympanites, and fever. Laparotomy disclosed an abscess between the left lobe of the liver and the lesser curvature of the stomach, holding about three ounces of pus. The perforation in the lesser curvature was still patent, and admitted the index finger. It was sutured, and the patient made a good recovery. Five months later, she was reported in fairly good condition.

In a similar case, also unpublished, Dr. Abbe reached and drained the abscess and sutured the perforation after excising the ulcer. The result, as far as the stomach was concerned, was perfect; but the inflammatory process had already invaded the diaphragm, and the patient died, at the end of eighteen days, of purulent pleurisy.

Melzer[1] has collected 110 cases of subphrenic abscess, in which only 5 of them were bilateral. Of the 48 unilateral cases occurring in women, 34 were on the left side, while of 57 unilateral cases in men, only 13 were on the left side. These figures are explained by the causes of the abscesses, which were: Gastric ulcer, twenty-eight times in women, four in men; duodenal ulcer, seven times in men, two in women; appendicitis, eleven cases in men, two in women.

Four cases are on record[2] in which a gastric ulcer has ended by perforation into the left ventricle of the heart, with immediate fatal hemorrhage.

Diagnosis.—At all stages in the development of a subphrenic abscess the physical signs are complex, and the diagnosis is one to tax the powers of the best observer. From one-third to one-half of the abscesses contain gas[3] (see Fig. 1), in which case the expected dulness will give place to a tympanitic resonance. Inasmuch as the diaphragm is involved in the inflammation, a serous pleuritic effusion may also result to add to the confusion. Pus and gas may likewise be found in the pleural cavity, if the diaphragm is perforated.

Before a perforation of the diaphragm has occurred the absence of Litten's "diaphragm phenomenon" associated with dulness over the lower thorax, not due to liver or spleen, may be suggestive of subphrenic abscess.[1] This "diaphragm phenomenon," which is not as well known as it should be, is the visible sucking-in of the lower intercostal spaces, one after the other, corresponding to the descent of the diaphragm. If the phenomenon is present on one side and absent on the other, there exists on the side on which it is absent either fluid or gas in the pleural cavity, pneumonia of the lower lobe, or a subphrenic abscess; for it is in these conditions that one is most likely to have a one-sided arrest of the muscular action of the diaphragm from inflammatory paralysis. The impairment of diaphragmatic motion is stated to be present in seventy per cent. of the cases of subphrenic abscess. The clinical value this test, however, remains *sub judice.*

The aspirating needle is another valuable aid in diagnosis, although owing to the cheesy character of the pus, several punctures and a large-sized needle may be necessary to obtain a positive result. If pus is found it will sometimes flow *out* in *inspiration* and not in expiration, thus indicating that the pus is below the diaphragm and not above it. If the needle enters a gaseous cavity a similar motion is communicated to the current of air, as shown by a monometer,[2] or by the effect on the flame of a match held close to the opening of the cannula, a test which Weir[3] found of value in one case. Further, the butt of the needle may be seen to rise on inspiration, since the descending diaphragm carries the point with it, and the chest wall forms the fulcrum; but, here too, paralysis of the diaphragm may interfere seriously with this as in nearly all of the tests. Indeed, in a recent case, Maydl,[4] with all his experience, was only able to establish a diagnosis after opening the abscess and cutting out a piece of its superior wall, and submitting the same to a microscopical examination, which revealed its muscular structure.

Prognosis.—Spontaneous recovery is very rare, but it has been reported, even when complicated by purulent pleuritis.[5] Barton[6] mentions the case of a woman, aged thirty-seven, who had been treated for years for gastric ulcer, with hematemesis, etc. One day she had severe pain, and vomited a quantity of dark material. The pain and vomiting continued for four weeks with subnormal temperature, as low as 95° F., and never

[1] Melzer, *N. Y. Med. Rec.*, February 15, 1896.
[2] Finny, *Br. Med. Jour.*, 1886, i, p. 1102.
[3] Debove, *Gaz. d. Hôpitaux*, 1890, p. 1159.

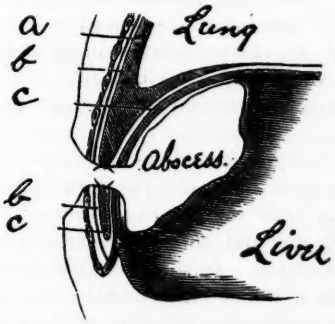
[1] Litten, *N. Y. Med. Rec.*, 1895, ii, p. 901.
[2] Pfuhl, *Berl. klin. Wochenschr.*, 1877, p. 57.
[3] Weir, *Internat. Med. Magazine*, February, 1892.
[4] Maydl, *Wiener klin. Rundschau*, January 19, 1896.
[5] Fenwick, "Clinical Lectures on Some Obscure Diseases of the Abdomen," 1890, p. 121.
[6] Barton, *Brit. Med. Jour.*, 1890, i, p. 1013.

above 99° F. She was given nutrient enemata and large doses of opium. At the end of the fourth week she passed a quantity of offensive pus per anum. From that time, there was a daily evacuation of pus, diminishing from about six ounces until it ceased, three weeks later. She was fed for six weeks almost entirely by the rectum. Recovery was perfect.

Such cases as these are to be looked on as happy accidents, and have no effect on a rational treatment. Left to itself, the abscess usually perforates the diaphragm,—on the left side, if of gastric origin,—and the patient succumbs to the septic products in from one to three months.

The treatment consists in the location and evacuation of the pus. If aspiration through the seventh, eighth, or ninth intercostal space procures pus, it is a very simple procedure to let it out thoroughly and drain the cavity, either by a thoracic incision, or by resection of a portion of the rib. If aseptic precautions are observed in the aspiration, and in the subsequent operation, and, what is the most important, if the diaphragm and pleura are stitched together, before the former is

FIG. 2.



Thoracic Opening in Subphrenic Abscess. From Beck. *a*, pleural cavity; *b b*, costal pleura; *c c*, diaphragmatic pleura. At the opening the two layers of pleura (costal and diaphragmatic) are represented as sewed together, above and below.

incised, as suggested by Volkmann and Thornton, it is entirely possible to protect the pleural cavity from infection. Sometimes the prominence of the abscess in the epigastrium leads to an incision in that region; and several cases have been reported when the abdomen was opened in the left hypochondrium. In other cases, especially of the rarer extra-peritoneal variety, the lumbar incision proves most satisfactory.

Maydl,[1] whose exhaustive consideration of the subject of subphrenic abscess has justly received wide notice, was able to collect only ten cases of operation with three recoveries. Comte[2] found thirteen others with eight recoveries. Beck[1] has recently contributed three successful cases. Abbe has had two fatal cases, and Weir, five, with a similar result, making with McCosh's case, a total of thirty-four operations with fifteen recoveries. Several of these operations were performed at too late a period, when abscesses in thoracic or abdominal organs made death inevitable.

Eight times the incision was made in the epigastrium with five recoveries, in only one of which was suture of the associated gastric perforation attempted. Such a procedure is often very difficult on account of the adhesions, and, moreover, in several autopsies it appeared that the ulcer had entirely closed by cicatrization.

Of the two cases where the incision was made in the left hypochondrium, in one, the stomach was sutured with great difficulty, and death followed leakage in the suture line; in the other, no suture was attempted, and the patient recovered. Hence, one may safely leave the gastric opening to close by cicatrization, or by a secondary operation, if necessary. In eight cases the abscess was relieved by thoracotomy; of these, five recovered; three, complicated respectively by gangrene of the spleen, abscess of the spleen, and extensive suppuration, succumbed.

Cramer[2] has recently reported two successful cases operated upon by Bardenheuer. The pus in these cases was from an unusual source. In one case, situated on the left side, it originated from a splenic abscess, while in the other it started from an inflamed Fallopian tube, and developed between the liver and diaphragm on the right side.

One is justified, then, in concluding that if an abscess can be located with an exploring needle before serious organic lesion has occurred, that surgery offers a good chance of recovery, while therapeutic measures have little power to avert a fatal issue. Comte says "the prognosis of infra-diaphragmatic abscess of gastric origin is fully as grave as that of diffuse peritonitis." Attempts at evacuation of the contents of such abscesses, through a large needle, are universally condemned, and the incisions made for their relief should be free, and often associated with posterior drainage.

OPERATIONS FOR NON-PERFORATING GASTRIC ULCER.

The surgical treatment thus far discussed considers only perforated ulcers and their sequelæ; but without perforation a gastric ulcer may give rise to symptoms for the relief of which an oper-

[1] Maydl, "Ueber Subphrenische Abscesse," 1894, p. 330.
[2] Comte, *The Medical Week*, September 27, 1895, p. 466.

[1] Beck, *Medical Record*, 1896, i, p. 217.
[2] Cramer, *Deut. Zeit. f. Chir.*, 1896, Vol. xlii,, p. 597.

ation is indicated. Of these conditions may be mentioned

ADHESIONS RESULTING FROM GASTRIC ULCER.

Thus, as the result of ulceration, adhesions may be formed between the wall of the stomach and the contiguous structures. If the ulcer is situated posteriorly, the cicatrix thus formed is usually the most favorable termination of the trouble. If a movable portion of the stomach is involved, symptoms may result, not only those produced by a perforation or by an abscess formation, which have been already spoken of, but such as result from traction on adhesions of lesser or greater extent. Hahn[1] found in one case five separate old adhesions between the stomach and transverse colon, which he divided, and thus cured the patient of pain which had existed for years. Similar cases in which there were adhesions between the stomach and the liver have been operated upon by Rosenheim, Robson,[2] Perrier,[3] and Lauenstein.[4] In four of these cases the operation was a complete success; in three others the relief obtained was only temporary. In all of these cases the adhesions were of slight extent.

Mikulicz[5] had a case in which the stomach was adherent to the abdominal wall. He was able to divide the adhesions and free the viscus, to the complete relief of the patient. In two similar cases—one in charge of Billroth[6] and one of Hofmeister,[7] the stomach was torn in the attempt to divide the extensive adhesions which bound it to the abdominal wall. The underlying adherent portion of the stomach was thereupon excised, and the opening so made was duly sutured. Both patients recovered. In Hofmeister's case the opening in the stomach was as "large as a saucer," and it was found necessary to suture it transversely, in order to avoid undue constriction of the organ.

These three cases gave essentially the same history of gastric trouble for years, marked by epigastric discomfort, which was aggravated by food to a colicky pain, with occasional vomiting and loss of flesh and strength. In each case there was a well-marked tumor in the epigastric region, adherent to the abdominal wall.

Occasionally the surgeon may find presented to him, in a rather acute case, after the ventral abdominal incision has been made, that he has happily interfered, when limiting adhesions have recently shut off either a completed or a progressing perforation. These cases are properly to be considered under the first division of our subject, but can be touched upon here. The case lately presented by Dr. Parker,[1] and included in Table I, was of this kind. On the anterior wall of the stomach was found a mass of adhesions, soft in character, on separating which an incomplete perforation was seen and felt. This was packed with iodoform gauze and the tract left to granulate. The patient made a satisfactory recovery.

PYLORIC STENOSIS.

Of this, which is somewhat beyond our theme, it may be said shortly, that it has long been recognized that the ulceration of the pylorus and the contraction of the inflammatory tissue, which it occasions, are responsible in its acute condition for the pain, hemorrhage, and sundry disorders of digestion, and in its chronic form for the conjoined dilatation of the stomach. For its relief, the stretching of the contracted pylorus, suggested by Loreta, has so often been followed by recontraction, as now to have become an obsolete practice. The cure of such narrowings may be secured by the ingenious procedure for the enlargement of the contracted pylorus of Heineke-Mikulicz, which converts a horizontal incision into its lumen into a vertical one through transverse suturing.

Pylorectomy, a formidable operation, has several times been successfully performed for gastric ulcer at or near the pylorus. Comte[2] mentions five successful and three unsuccessful cases of pyloric resection. In three of these there was a dense tumor, which until operation was supposed to be carcinomatous, and in two of these instances its true nature was determined only after microscopical examination.

The chief objection to the pyloro-plastic operation is its high mortality. In the hands of one of its originators, Mikulicz,[3] it has a mortality of over fifty per cent. If it should be continued at this rate gastro-enterostomy should preferably be resorted to.

IRREGULAR GASTRIC CONTRACTIONS.

Allied to the foregoing complications of a gastric ulcer is the hour-glass stomach from a cicatrized ulcer. This rare condition has three times been operated upon in substantially the same manner; viz., by establishing an anastomosis be-

[1] Hahn, *Deut. Med. Wochenschr.*, 1895, No. 3.
[2] Robson, "Tr. Clin. Soc.," 1893; *Centralbl. f. Chir.*, 1895, p. 407.
[3] Perrier, *Centralbl. f. Chir.*, 1895, p. 676.
[4] Lauenstein, *Arch. f. klin. Chir.*, vol. xlv.
[5] Kænsche, *Deut. Med. Wochenschr.*, 1892, No. 49.
[6] *Arch. f. klin. Chir.*, vol. xxxix., p. 805.
[7] Hofmeister, *Beit. z. klin. Chir.*, 1896, vol. xv., p. 356.

[1] "Proceedings Surgical Society," March, 1896.
[2] Comte, *The Medical Week*, 1895, p. 466.
[3] Mikulicz, *Arch. f. klin. Chir.*, 1896, vol. li, p. 24.

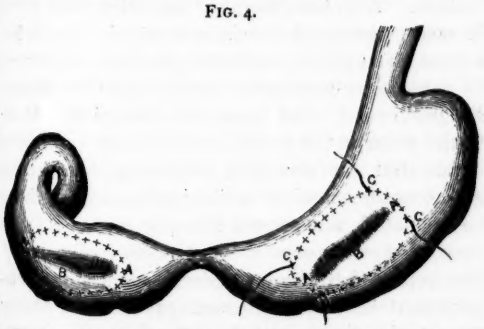
tween the two halves of the stomach. Wölfler[1] reported a successful case of this kind. In Eiselsberg's[2] case the suture leaked and the patient died of peritonitis. Watson[3] of Boston, has lately published a third case, in which the structure was so firm and small, as barely to admit the little finger introduced into it from without the stomach. The symptoms of pain, nausea, and vomiting, which had been growing more marked since their beginning, five years previous to operation, were entirely relieved by the anastomosis, and in five months she had regained twenty-two of the forty pounds in weight, lost in the year preceding operation.

FIG. 3.

Shows the position of the stricture.

The diagrams (Figs. 3 and 4), sufficiently illustrate the condition of the stomach and the operation done to relieve it. The suture was first completed, apposing the walls of the stomach, and then the anastomosis was established. It was accomplished, and this is Watson's modification of the operation, by an incision made in the

FIG. 4.



The stomach is here represented as being turned back to its original position in order to show the form (A A A A) of the sutured areas which united the two parts of the stomach. The communicating incisions (B B) and the position of the four long sutures (C C C C) which served as guides to indicate the limits of the sutured areas.

superimposed stomach. Through this opening, another cut, through the two already applied gastric walls, was carried with exactness into the subjacent or cardiac end of the stomach. After this was finished, the first incision, *i.e.*, that made in the pyloric end of the stomach, was closed as usual by sutures, as is shown in Fig. 4.

Gastro-enterostomy is a preferable operation. The anastomosis can either be a single one posteriorly at the stenosed part, conjoined with a Mikulicz-Heineke incision anteriorly at the same location, or a double gastro-enterostomy may be performed, tapping each sac of the stomach.[1]

RESECTION OF ULCERS NOT IN THE PYLORUS.

As long ago as 1882, Czerny[2] opened the stomach of a man aged forty-two, who had suffered for two years from incessant pain and vomiting. He found a large ulcer in the posterior wall and lesser curvature. A part of it was scraped out thoroughly, and a part was excised. The patient recovered, and in three months he had gained over forty pounds in weight.

In 1888, Cordua[3] reported the resection of an ulcer of the anterior wall of the stomach of a woman of forty-six years of age. The ulcer formed a movable tumor, easily palpable in the left hypochondrium. Its excision was attended by complete success, and the relief of a severe gastralgia of ten years' duration.

Two cases of successful resection of an ulcer adherent to the anterior abdominal wall have been referred to under adhesions. One of the most instructive of these cases is that of Schuchardt,[4] who excised an ulcer in the lesser curvature of the stomach. Two weeks later the patient died, and on autopsy, a second ulcer was discovered, larger than the first, and in a scarcely accessible situation, for a careful search with the hand (*sic*), introduced into the stomach at the operation, did not reveal it.

Keen[5] has also, with success, resected (in 1892) a gastric ulcer, supposed to have been a carcinoma from its symptoms, but which was probably a chronic simple ulcer, from the clinical aspects, the patient yet living, four years after the operation.

In the preceding cases the general sufferings of the patient determined the operation. But resection of a gastric ulcer has also been performed for hemorrhage. Roux[6] reported to the French Congress of Surgeons in 1893 that he had excised a small ulcer in the lesser curvature of the stomach of a man who was very anemic from two copious hemorrhages. The ulcer had eroded the coronary artery. This vessel was ligated and the opening

[1] Wölfler, *Beit. z. klin. Chir.*, 1894, vol. xiii, Part I.
[2] Eiselsberg's, *Arch. f. klin. Chir.*, 1895, vol. l., p. 919.
[3] Watson, *Boston Med. and Surg. Jour.*, 1896, i, p. 338.

[1] Von Hacker, "Magenoperationen," 1895.
[2] Maurer, *Arch. f. klin. Chir.*, vol. xxx, p. 1.
[3] Cordua, *Rev. d. Sciences Méd.*, vol. xxxiv, p. 259.
[4] Schuchardt, "Ger. Congress of Surg.," 1894.
[5] Written communication. Details to be published by him later.
[6] Roux, *Medical Week*, 1893, p. 63.

in the stomach sutured in three rows. The patient recovered.

Mikulicz[1] had a similar case, also involving the coronary artery, in which resection of the ulcer was likewise successful.

From this meagre number one can appreciate the sentiments of surgeons in connection with a condition that appeals strongly to their art for relief. In 1892 it was urged[2] that more boldness should be had in treating this symptom, which gave a higher mortality when treated expectantly than is generally believed; for Muller, in 127 cases of gastric ulcer, found hemorrhage to occur in 37 instances, and of these 14 were fatal, and that the treatment of this condition should not be postponed until the loss of blood had dangerously weakened the patient, and thereby lessened his chances of recovery.

But experience gathered since then has shown some unexpected difficulties which are likely to be encountered, one of which is illustrated by the case of Schuchardt just quoted, where great difficulty was experienced in finding the ulcer or all of the ulcers. There are ulcers where the thickening is so great as to form a tumor easily felt through the abdominal wall, or, as in our successful case, to be detected on palpating the exposed stomach; while in other cases it is difficult to recognize an ulcer by sight or touch, even after the stomach has been widely opened. In one of the cases already quoted, Abbe of this city, in his search for a gastric ulcer, made an incision in the anterior wall of the stomach 1½ in. long. Through this the stomach wall was everted, the opening being shifted in various directions for this purpose, but no ulcer was found; though at the autopsy later, several ulcers were seen to be present. And the writers of this article have recently seen at autopsy two cases in which an operation had been refused, and in which death followed repeated copious hemorrhage. In both cases the ulcer was so minute that it was difficult to find it when the whole stomach was spread out in a good light. In one of the cases its presence was positively shown only by transmitted light, which revealed a slight thrombus in the eroded vessel, situated in an otherwise bloodless stomach wall.

In cases like these the chance of finding the ulcer at the time of the operation, unless the vessel is bleeding, is practically *nil*. It is doubtful whether the illumination of the stomach, held up while an electric light is passed into it, or behind it into the lesser peritoneal cavity, would assist in the location of the ulcer; but this idea was suggested by the difficulties in Abbe's case. This case, as well as that of Schuchardt and others, presented the further difficulty of a multiplicity of ulcers. Even if found, they are not always in the same neighborhood; and a double or triple resection would add greatly to the severity of the operation.

In such a dilemma, the suggestion made by Doyen,[1] and practised by him in twenty-nine cases, seems worthy of consideration. It is the systematic application of rest to the ulcerated stomach, by means of a gastro-enterostomy, just as an ulceration of the rectum is often well-treated by a colostomy, or as a painful bladder is relieved by a suprapubic opening. The results in his own gastro-enterostomies, as well as those of other surgeons, prove that when this artificial pylorus is well-established that ulcers quickly heal and hemorrhage ceases.

But the question as to the risk of operation at once arises. What is the danger, on the one hand, from the operation *per se*? And, on the other hand, what is the danger to the patient from the ulcer if let alone? It is not easy to obtain the mortality from gastro-enterostomy in benign cases, and our information is therefore scanty. We present, however, for purposes of comparison, the following figures: Mikulicz[2] operated twenty-eight times, with nine deaths (thirty-two per cent.). Most of his cases were carcinomatous. Also that Murphy[3] has collected reports of cases, nearly all carcinomatous, in which his button was used to perform gastro-enterostomy. Of these sixty-one cases, twenty-eight (or forty-six per cent.) died from the operation. More to the point is the testimony of Haberkant[4] who states that the mortality following forty-seven gastro-enterostomies for benign causes, which he had collated, was twenty-five per cent. In contrast to these figures are the results of Doyen,[5] who reported to the last French congress of surgery that he had performed gastro-enterostomy twenty-nine times, with three deaths. The operations were nearly all performed for ulcer, pyloric spasm, or gastric dilatation due ulcer or pyloric fissure(?), only a few cases being cancerous. As two of the fatalities occurred in the cases of cancer, his record in benign cases is nearly perfect. Unfortunately, details of the cases operated upon are not given.

[1] Mikulicz, *Arch. f. klin. Chir.*, 1895, vol. li, p. 24.
[2] Weir, *loc. cit.*

[1] Doyen, *Rev. d. Chir.*, 1895, p. 911; *Cent. f. Chir.*, July 6, 1895.
[2] Mikulicz, *Zeit. f. Chir.*, 1895, vol. xxxvi.
[3] Murphy, MEDICAL NEWS, Philadelphia, November 16 and 23, 1895.
[4] Haberkant, *Arch. f. klin. Chir.*, 1896, vol. li., p. 861.
[5] Doyen, *Rev. d. Chir.*, 1895, p. 911.

When we try to estimate the risk to the patient from a gastric ulcer not surgically treated, we find that, according to the best authorities, from ten per cent. to fifteen per cent. of all cases die from perforation, and an additional three per cent. from hemorrhage. To this must be added a further small percentage in which ulceration ends in carcinoma (Comte says that from four to nine per cent. of the cases of malignant disease of the stomach develop in the base of a simple ulcer), and another percentage of patients who die slowly from pyloric stricture, adhesions, etc.

From all these data, it is safe for comparison to infer that about one-fifth of all the cases of gastric ulcer which are treated medically, die. This is properly to be contrasted with the reliable figures of Haberkant, who has shown, as just stated, that, by gastro-enterostomy, the least dangerous of surgical operations proposed to cure a gastric ulcer of severity, a mortality of twenty-five per cent. is to be expected.

The difference in the mortality given by Doyen, and that by other surgeons, is hardly to be accounted for by the slight improvement suggested in the former surgeon's technic. This consists[1] mainly in first tucking the greater omentum backward into the lesser peritoneum through a hole made in the gastro-colic omentum, and then stitching the colon to the stomach in order to save the dragging of the parts on the jejunum when the latter is attached by the gastro-enterostomy, which is now finally completed.

The application, therefore, of the operation of gastro-enterostomy for the relief of gastric ulcer, producing repeated hemorrhages, severe and prolonged pain, or obstinate vomiting (Doyen's formal indications for operation), while it is attractive in principle and meets well the difficulties of the other operations that have been practised, must be considered to be temporarily in abeyance.

The operation of gastro-enterostomy is yet unsatisfactory in its details. This is acknowledged by surgeons of experience, and is further proven by novel methods for its performance that are evolved at short intervals. The gastro-enteric opening can be readily effected, but the free current of the food, and particularly the bile, to the intestines below is not always safely accomplished, and in this respect the operation is individually felt to be a yet unsolved problem. Should, however, the improvement, suggested by Doyen, be corroborated at the hands of other surgeons, or perhaps even be bettered by them, the employment of the operation of gastro-enterostomy for the relief of the painful and less urgent forms of gastric ulcer would at once enable relief to be given to many, and our art to be notably amplified.

[1] *Arch. Provinciales de Chirurg.*, November, 1894: Congress for the transactions of the Chirurg., Française, 1895, p. 249.

CLINICAL LECTURE.

INFECTED ATMOSPHERE.[1]

By GUY HINSDALE, M.D.,
OF PHILADELPHIA.

THE air we breathe is a fertile subject for scientific investigation. Twenty years ago we knew comparatively little about the organic constituents of the atmosphere. Beyond the evidence of our senses in detecting bad air, prompting us to apply the general principles of ventilation, and beyond the well-grounded belief and knowledge that change of air to the mountain or the sea would favor the recovery of cases that resisted other measures, little was known.

Three names stand out prominently in the work which marks the beginning of a new epoch in this field—Pasteur, Tyndall, and John Bastian. Although the labors of the last-named investigator were extensive, and his conclusions produced an immense impression at the time they were published, they were entirely overthrown by Tyndall and Pasteur, and have now nearly passed into oblivion.

Bastian, twenty years ago, championed the doctrine of spontaneous generation. But the best minds of England and France not only proved him incorrect, but rapidly established the fact that all germs come from pre-existing germs, and that germ-life cannot arise *de novo*. Every one among us knows to-day that every aseptic dressing, every aseptic solution, so remains, provided it be not contaminated from without. The purest air we ever breathe contains some particles in suspension. This floating matter may be entirely innocuous, or it may consist of dangerous germs that seek lodgment in our throats, our lungs, our intestines, a crevice in the skin, or some other vulnerable point. Besides the floating matter in the atmosphere, embracing many germs that are well-known to be virulent, it has been commonly believed by physicians and sanitarians "that the discomfort and dangers to health and life which had been known to exist, sometimes at least, in unventilated rooms occupied by a number of human beings, were largely or entirely due to peculiar organic matters contained in the air expired by these persons, and that the increase in carbonic acid due to respiration had but little effect in producing these results, its chief importance being that it furnished a convenient means of determining the amount of vitiation of the air." In this connection I take the opportunity of calling attention to the latest researches on this subject, just published as one of the "Smithsonian Contributions to Knowledge," by Drs. John S. Billings, S. Weir Mitchell, of our own staff, and Dr. D. H. Bergey of the Laboratory of Hygiene of the University of Pennsylvania.

Experimenters hitherto have reported various results,

[1] Delivered before the Class of Nurses in Training at the Orthopedic Hospital and Infirmary for Nervous Diseases, Philadelphia.

but the majority have, of late, denied that the exhaled breath of healthy human beings, or of animals, contains a poisonous or organic alkaloid, or any poisonous product other than carbonic acid.

Dr. Bergey began by causing a man to breathe for from twenty to thirty minutes so that the expired air should pass through sterilized melted gelatin, which was then preserved as a culture for from twenty to thirty days. In the first trial six, and in the second two colonies of common air organisms developed; but when special care was taken to thoroughly sterilize the vessels used, the result was that in two consecutive trials the gelatin remained sterile. Epithelial scales and other matters were sought for by condensing the vapor of the exhaled breath and examining the product with the microscope. In six preparations thus made no bacteria or epithelial cells were found.

Experimenters in this field find that in one day a healthy man will exhale over a thousand gallons of air, and from six to twelve ounces of moisture. There is more or less ammonia in the product exhaled, the more where the teeth are allowed to decay and proper cleanliness is not observed. In examining the breath from a consumptive Dr. Bergey found that the fluid contained a smaller proportion of ammonia, and a larger amount of oxidizable matter than did fluid similarly collected from a healthy man. No organic alkaloids were found.

It was found in attempting to condense the moisture of the air of hospital wards that the placing of a dust filter in front of the condensing apparatus causes a marked reduction in the proportion of ammonia in the condensed fluid.

Drs. Billings, Mitchell, and Bergey, made a series of experiments by injecting into animals the fluid condensed from the air expired by healthy persons, and also by a man, whom you may remember to have seen in our clinic, whose larynx has been removed and who breathes through a tracheal fistula. In the last case the possibility of contamination of air in the mouth was of course excluded. The injections were made into the general circulation in rabbits, guinea-pigs, and white rats. The results of the subsequent examination showed that there was no special disease or degeneration in the organs of these animals; in other words, there was no organic poison.

The conclusion from this experimental work is that the injurious effects of air expired by healthy animals and men are due entirely to the diminution of oxygen, or the increase of carbonic acid, or to a combination of these two factors. It would appear also quite improbable that the minute quantity of organic matter contained in the air expired from human lungs has any deleterious influence upon men who inhale it in ordinary rooms, and hence it is probably unnecessary to take this factor into account in providing for the ventilation of such rooms.

The experiments showed, secondly, that in ordinary quiet respiration no bacteria, epithelial scales, or particles of dead tissue, are contained in the expired air. But in the act of coughing, or sneezing, such organisms or particles may probably be thrown out.

Thirdly, the ammonia exhaled is chiefly due to the products of decomposition of organic matter, which is constantly going on in the mouth and pharynx.

Fourthly, the air of hospital wards was found to be contaminated chiefly by minute particles—dust. This contained micro-organisms capable of producing inflammation and suppuration.

Fifthly. No peculiar volatile poisonous matter in the air expired by healthy men and animals was found, save carbonic acid.

It was also found in these investigations, as in others preceding them, that animals may be habituated to an atmosphere so vitiated by a loss of oxygen and an increase of carbonic acid, that a similar animal brought into it from fresh air dies almost immediately. It would appear that immunity to vitiated air may exist normally in certain mice, or be produced in them. It would be an interesting research to determine what races of men can endure the greatest foulness of atmosphere. One who reads the testimony of Arctic explorers, from Dr. Kane to Caspar Whitney, cannot fail to be impressed by the tolerance which the Esquimaux Indians show in this regard.

In the excessive cold of the Arctic regions the consumption of oxygen increases as the temperature diminishes, and the demand for oxygen is more urgent than in temperate climates. Drs. Billings, Mitchell, and Bergey, say that the proportion of increase of carbonic acid and of diminution of oxygen, which has been found to exist in badly ventilated schools, theaters, or barracks, is not sufficiently great to satisfactorily account for the great discomfort which such conditions produce in many persons, and there is no evidence to show that such an amount of change in the normal proportion of these gases has any influence upon the increase of disease and death-rates, which statistical evidence has shown to exist among persons living in crowded and unventilated rooms. The causes of the increased death-rate under these circumstances are chiefly pulmonary tuberculosis and pneumonia arising from the access of infected dust to the air passages. It is also pointed out that impure atmospheres may affect the vitality and bactericidal powers of the cells and fluids of the upper air passages with which they come in contact, and may thus predispose us to infections, the potential causes of which are almost everywhere present, and especially in the upper air passages and in the alimentary canal of even the healthiest persons. Whether such be the cause or not we do not know; future studies may enlighten us.

The recent observations[1] of Dr. Irwin H. Hance at the Adirondack Cottage Sanitarium ought to dispel some of the ill-grounded fears of the danger of contracting tuberculosis by mere contact with patients suffering from this disease. Needless prejudice has no doubt been aroused by ignorance of the precise manner in which tuberculosis may be communicated and hardship entailed on the unfortunate subjects. We know that hospitals, private dwellings, and conveyances do become infected, but we doubt if the patient infects by mere contact, much less by his breath. It is through the sputum, when dried and distributed through the atmosphere, that the chief mode of infection operates. Dr. Hance quotes the investigations of Celli and Guarnieri, who found the expired air of tubercu-

[1] *Medical Record*, New York, December 28, 1895.

lar patients free from tubercle bacilli, and also that air blown by a bellows over and through sputum very rich in bacilli remained free from these germs. Seven other experimentors made similar observations. For two months Tappeiner[1] caused a woman with advanced phthisis to cough through an opening into a wooden box in which were two guinea-pigs; at the end of that time they were killed and found to be sound.

I report Dr. Hance's observations as they are of great practical value to a proper understanding of this subject. Dr. Hance examined the dust taken from eighteen buildings belonging to the sanitarium, some of these having been occupied for eleven years by consumptives. The dust was taken from the darkest and most likely to be infected spots. The first group of four buildings consisted of the main building (parlor, sitting-room, and public library); the infirmary where all the acutely sick are sent; the oldest cottage and the most recently built cottage. One square yard of dust from each of these buildings was collected and ten guinea-pigs inoculated with it. From each of the remaining thirteen cottages a half a square yard of dust was taken and three guinea-pigs inoculated. These inoculated animals were kept from one to three months and then killed and microscopically examined. Five were found to have had tuberculosis, four others having died on the third to sixth day of other infectious diseases. The five that had tuberculosis constituted just one-half of the number of pigs inoculated with dust from the oldest cottage on the grounds, accommodating two patients, always advanced cases, one of them having been complained of by his roommate for spitting around the cottage.

It was thus scientifically proven that in this case carelessness and disobedience of rules, which a weak and sickly man is prone to break, were responsible for the infection of a cottage, thereby rendering it dangerous to himself and others.

On the other hand, the remaining sixteen buildings, some of which had been occupied for ten years by consumptives, were absolutely free from infectious material.

Such, then, are the results in a sanitarium favorably located in the Adirondack Mountains, presided over by one who is giving the best years of his life to the scientific treatment of tuberculosis, at the bedside and in the laboratory.

But what may we expect to find in the city hospital, where clouds of dust sweep over us from we know not where, and smoke from factories and locomotives poison the atmosphere?

Cornet collected dust from the walls and headboards of beds in seven of the hospitals of Berlin where phthisical patients were treated, and inoculated ninety-four animals. Fifteen out of twenty-one rooms furnished tuberculous matter. Of the ninety-four animals fifty-two died of other diseases; of the remaining animals, killed after forty days, twenty were tuberculous and twenty-two were sound. Tests of dust from the walls of houses of fifty-three private patients affected with tuberculosis were introduced into 168 animals, of which ninety died soon after the injection, thirty-four were found tuberculous, and the remainder sound. In the aggregate about one-fifth of the animals submitted to these tests were found to have become tuberculous. If acute intercurrent disease could have been avoided the proportion no doubt would have been still greater, as many animals died of some acute infection within two or three days. Cornet found that in no case was the dust infectious when gathered from rooms where cups and cuspidors were used exclusively to receive the sputum. We have seen that here again Dr. Hance has corroborated Cornet's result.

Dr. Hance examined the dust from the wards of a large city hospital occupied by tuberculous patients of both sexes. Out of nine pigs inoculated, five died of acute infection within three days. The four living pigs were killed at the end of sixty days and one had well-advanced tuberculosis.

Nurses, as a class, are unquestionably very liable to contract phthisis, but I do not believe that in this country the liability is anything like what is said to exist in Europe. The religious orders throughout the continent supply nurses for most of the large hospitals, and it is no doubt true that close confinement in convents, and the subsequent hard work and exposure to disease, renders them an easy prey to tuberculosis. It has been said that an examination of the records for twenty-five of thirty-eight European nursing societies, sixty-two per cent. died of tuberculosis. These records gave the cause of death in four thousand of the members.

I do not know that anyone has made investigation of the causes of death among American nurses in general; it is an important subject for study. We have it, however, on the authority of Dr. Herman M. Biggs, that in one of the New York hospitals as many as eleven nurses and orderlies, previously healthy, had been dismissed within a little more than two years because suffering from tuberculosis. It was an overcrowded and poorly ventilated institution.

I think I have thus made plain that dust is the abomination to be shunned. We shall probably never live where we can absolutely avoid it, but we can do a great deal toward preventing its virulent character. If the doctrine of spontaneous generation had been established, little encouragement might be expected in a fight against infectious diseases, but, as Pasteur said, thirty years ago: "Man has it in his power to cause parasitic diseases to disappear off the surface of the globe." Prevention, like charity, properly begins at home; and eternal vigilance is the price of safety. We can point with pride to the perfection of neatness seen in this hospital. In the first place its situation is not so exposed as in the case of some institutions. Its construction with marble and hardwood floors, its staircases of marble and iron; its painted walls and ceilings; the use of steam radiators, and the best appliances which a liberal management can furnish, go far to insure a good return for the efforts made to preserve cleanliness and good order.

In our own homes few have marble floors and steam heat, and painted walls are not looked upon with favor. We can, however, make a warfare against dust. A hardwood floor is conducive to health, because it quickly shows

[1] *Archiv f. Med.*, Bd. xxix, S. 59.

the presence of dust or dirt, and can easily be kept clean. But, best of all, we have sunlight. The tubercle bacillus is one of those imps that loves darkness rather than light, because his deeds are evil. There is no disinfectant so potent against tubercle bacilli as bright sunlight. The sunniest spots are the safest. In choosing a home avoid shadows from trees or high buildings; avoid dampness, especially dampness of the soil, and above all make inquiry as to previous occupants, whether in your home or your hotel, and if tubercular disease has been present, and no proper disinfection or supervision of the patient has been practised, see to it that the quarters are put in proper order or secure others.

I commend to your perusal the three tracts issued by the Pennsylvania Society for the Prevention of Tuberculosis, entitled: "How to Avoid Contracting Tuberculosis," "How Persons Suffering with Tuberculosis can Avoid Giving it to Others," and "How Hotel-keepers can assist in Preventing the Spread of Tuberculosis."

CLINICAL MEMORANDUM.

TWO CASES OF ACUTE MASTOIDITIS IN PERSONS SUFFERING FROM DIABETES MELLITUS.

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IN a recent issue of the MEDICAL NEWS (March 21, 1896), Dr. R. A. Urquhart, of Baltimore, reports "Two Cases of Abscess in the Mastoid Region, Associated with Diabetes Mellitus," and says, in the course of his remarks thereon, "that there does seem especial tendency to inflammatory changes in the mastoid region in the dyscrasia under discussion, there is unmistakable evidence, but as to the existing relationship, we are as much in the dark, as we are ignorant of the true nature of the diabetic diathesis." In reading over these remarks, the question arose in my mind as to whether or not my own experience was in accord therewith. Out of a considerable number of cases of mastoiditis, two of them have occurred in diabetics, whose histories I will relate, and from them try to answer the above question.

CASE I.—Mrs. C., aged fifty, was referred to me by Dr. F. W. Wunderlich, and was first seen at her home, March 7, 1893. She gave this history: Discharge from the left ear eleven days, preceded by ten days of severe pain, which pain has only gradually subsided since the commencement of discharge, until it has now ceased. At first had a loud pulsating tinnitus, which has stopped. Has severe pain in the right ear ever since two days after the pain began in the left ear, but as yet no discharge; the pain has been, throughout, accompanied in this ear by a pulsating tinnitus. The undoubted cause of her trouble was snuffing salt water up the nose, which she had done at the suggestion of a neighboring druggist. H. D. w. R. p/60, L. p/60; wh. R. 30″, L. 20″. Right canal partially filled with oil, etc., and, after clearing this out, the membrane was seen to be very red, with considerable bulging of the posterior half. Left canal full of sero-pus; left membrane has a small, nearly central, perforation, through which the sero-pus is constantly exuding. For treatment, punctured at once the right membrane, letting out a large quantity of sero-pus; inflated, and ordered the hot douche used every two hours. During the following ten days she was, the early part of the time, quite comfortable; the last few days, however, was suffering considerable pain in the right half of the head, with continued discharge, renewed pulsating tinnitus, and beginning mastoid tenderness until, on March 17th, it seemed to me unsafe to longer postpone opening the mastoid. This was accordingly done. The mastoid was found made up of small cells, in many of which were unhealthy granulations and a near approach to, but not absolutely, pus; cleansed and dressed in the ordinary way. March 20th, the old pain has been quite relieved. There is to-day some infiltration, hard and tender, along the anterior border of right sterno-mastoid muscle. Learned to-day, for the first, that patient is a diabetic. March 27th, the infiltration has, during the past week, in spite of every effort to stop it, increased, and pus has formed underneath the muscle, which can be pressed out through a sinus connecting with the mastoid wound. As this condition was extending, a counter-opening was made along the anterior margin of the sterno-mastoid, about three inches below the mastoid wound, and a drainage tube inserted. For the two days following this, there was quite extensive irregular infiltration extending around under the chin, down the sterno-mastoid muscle, and over part of the sternum. As I was without previous experience in diabetic mastoids, it may be imagined I was somewhat aghast at this extensive infiltration. I do not even yet understand the *rationale* of its occurrence, except that I believe it was due in some way to the sugar in the blood and other tissues. However, by April 3d the infiltration had largely disappeared, except immediately around the drainage tube, which was removed six days later. From this time on, the most noteworthy thing in the history of the case is the extreme slowness of healing, the patient not being in fit condition for final discharge until July 10th, the left ear having in the meantime quite recovered.

CASE II.—Mr. M., aged fifty-eight, seen by me in consultation with Dr. H. M. Sloat, May 1, 1893, who told me the patient has been a diabetic for probably a year; that when he took charge of him two or three weeks ago there was about ten per cent. of sugar in the urine, and that since that time he had been on diet, with marked decrease of the sugar. The attack with his ear dates back three weeks, at which time he was suffering from influenza. There has been discharge from the left ear three weeks, preceded for one day by pain, which was only partially relieved by the appearance of discharge, and soon returned to its former severity, being always worse at night. There has been, throughout, a loud pulsating tinnitus. Left auricle looks the least bit pushed out from the head; in left canal, pus, and along the posterior wall, very near the membrane, is a small, reddened, very sensitive, bulged portion. Left membrane has a posterior

superior, pouting, "teat-like" perforation, through which pus exudes freely. Prompt operation was recommended, and performed the next day, May 2d. Immediately after the first incision to the bone and loosening up of the periosteum, considerable pus escaped, apparently from a necrotic perforation of the cortex, just at the outer posterior border of the bony canal wall. The outer cortex was then chiseled away, with the escape of a large quantity of pus, the cell divisions being largely necrotic. The antrum was freely opened and scraped out, cleansed, and packed as usual. As a result of experience with the preceding case, I determined to dress this case daily, which was done.

The patient had not an untoward symptom until May 13th, the discharge from the tympanic cavity having ceased, the perforation in the membrane having healed, and the patient was about to leave the house. On this day he commenced to have symptoms which, while at first not very definite, ultimated in an attack of erysipelas, only clearly recognizable, however, by May 17th. May 24th, the attack of erysipelas has proven to be a severe one, affecting the whole right side of face and head, with considerable sloughing of upper eyelid; temperature repeatedly 104°; pulse 112–120; at times drowsy, at times restless, with some delirium the last day or two. The wound has not seemed seriously affected by the process, except that the granulations became rather flabby and pale, and the healing process stopped. The dressings have been continued with the utmost care twice daily since the 10th.

May 27th, consultation with Drs. Fowler and McCorkle, who, after going over the case together, expressed the conviction that the operation had been in every way a success, and that nothing different was to be advised, so far as the wound was concerned. Dr. McCorkle discovered a slight pneumonic process posteriorly over right upper lobe, whether septic, hypostatic, or diabetic, was not decided, although it was thought to be probably septic. As the patient was rather growing worse, a consultation was had, May 31st, with Drs. Delafield and Gray, of New York. In their opinion, patient is suffering with purulent meningitis, "probably originating from the ear trouble, rather than from the erysipelas." June 1st, the patient passed an enormous quantity of urine, loaded with sugar, after which grew worse, and died June 5th.

The etiology of these two cases is quite clear—one due to snuffing salt water up the nose, the other due to influenza. Both of these causes are, as is well known, perfectly competent to produce mastoiditis in any one, whether a diabetic or not. I find I have histories of one hundred and seventy-five cases of affections of the mastoid. Considering that out of that whole number only two have, to my knowledge, occurred in diabetics, I believe that I am safe in answering that my individual experience does not coincide with the view expressed by Dr. Urquhart.

Dr. Buck related some cases, and drew some inferences from them, before the American Otological Society, at its last summer's meeting,[1] in which he brought up the much more important questions, in this connection, of prognosis, the necessity for, and the success from, operation. He concluded very positively that such cases should be operated upon, and that the prospect of success was fairly good. My reason for taking up this point is to refer to an incident in the history of the first case. When I found the patient had diabetes, I wondered very much that Dr. Wunderlich had not told me of the fact, and asked him the reason of his silence. He said he feared I would not operate, his reason being that, two or three years before, he had a similar case, which he had sent to a prominent specialist, who positively refused to operate on account of the diabetic complication, and the case had died, as Dr. W. felt, without a fair chance. My own belief is very strong that such cases should be operated, and the earlier the better.

Considering the prognosis from the light thrown upon it by these two patients, it seems to me proper to consider that we had three inflamed mastoids of the kind we are considering, of which one recovered without operation, one recovered by means of operation, and one died. In this last case, I certainly think it is an open question whether the infection of the meninges arose from the ear trouble, or from the erysipelas. The patient progressed perfectly satisfactorily until the eleventh day after the operation, and was about to take up gradually his usual active life, when the early symptoms of erysipelas manifested themselves; and it is my own positive belief that he would have recovered but for this unfortunate complication.

[1] "Transactions Am. Otological Society for 1895."

MEDICAL PROGRESS.

Rupture of the Heart in the Course of Rheumatic Ulcerative Endocarditis.—SAMGUINE (*Presse Médicale*, 1896, No. 15, p. 91) has reported the case of a man, nineteen years old, who for twelve days presented pains in the joints, and on examination was found to be suffering with acute rheumatism, without evidence of a cardiac lesion. In the course of six days the patient was seized with intense precordial pain, and on auscultation pericardial friction-sounds were heard, most pronounced at the base. At the end of three days the friction-sounds had subsided sufficiently to permit the feeble sounds of the heart to be heard in their purity. The precordial pain had disappeared and the temperature was but slightly elevated. Some articular pain persisted. On the following day, after a good night, the patient, on attempting to rise, fell back, pale and dyspneic, and in a few minutes was dead. Upon *post-mortem* examination about a quart of blood was found in the pericardial sac, the inner surface of which was shaggy with lymph. The myocardium was flabby and dull. Upon the posterior aspect of the left ventricle was an area of ulceration about three-quarters of an inch in diameter, at the lower portion of which was a small opening traversing the thickness of the myocardium. The orifice permitted the introduction of a little finger, and its borders were soft and friable. The valves of the heart were normal and the coronary arteries presented no atheroma. The kidneys and the spleen contained embolic abscesses, and there was besides incipient cirrhosis of the liver and chronic gastritis. The joints were hyperemic and contained synovial fluid, but no pus. Microscopic examination showed that at the site of perforation the myocardium

presented a round-cell infiltration and numerous small hemorrhages. In places only detritus remained. The adjacent myocardium was involved in reactive inflammation. In and around the blood-vessels at the area of ulceration were granulo-fatty matters and micrococci. The micro-organisms were present especially near the endocardial surface, and proved to be staphylococci cerei albi. Lesions like the one reported may result, it has been thought, from either extension of the ulcerative process of myocardium through the muscular wall of the heart, or by occlusion of a coronary artery (either from atheroma or through detritus and micrococci), with breaking down of the part of heart deprived of its blood supply. The latter is the more likely mode of occurrence. The accident is a rare one, occurring, according to Osler, but fifteen times among 209 cases of ulcerative endocarditis.

The Weight-Relations of Normal Puerpera.—As the result of a series of observations made at the Obstetrical Clinic of the University of Heidelberg, HEIL (*Archiv für Gynækologie*, B. li, H. 1, p. 19) found that the average loss of weight of one hundred puerperal women was five pounds for an average bodily weight of 122 pounds, about one to twenty-four. The greatest loss took place on the first day, gradually sinking to the fourth day, to ascend again on fifth and sixth days; on the seventh it approached that of the second and third. From the eighth to the tenth day the weight increased, to decline again from the eleventh. In eighty-two per cent. of the cases the minimum weight had been reached by the ninth day. In addition to the primary loss of weight in the first days of the puerperium, a secondary loss was appreciable, in the majority of cases, toward the close of the second week. In the case of women who did not nurse their children the loss of weight was below the average; as it was also in the case of unipara, tertipara, quartipara, and quintipara. In the case of deutipara the loss was above the average. The loss of weight bore a direct relation to the bodily weight. In young puerpera the loss of weight was strikingly slight. The loss of weight of a woman who had borne twins was thrice as much as the average loss in single deliveries.

THERAPEUTIC NOTES.

The Treatment of Dysmenorrhea.—TOUVENAINT (*Revue Internat. de Médecine et de Chirurgie*, 1896, No. 2, p. 39) divides the treatment of dysmenorrhea into symptomatic and curative. In the former he recommends the administration, several days before the expected time of the period, of emmenagogues, such as apiol, salicylic acid, cerium oxalate, and especially potassium permanganate (in doses of from three to nine grains daily). When menstruation has set in, a cataplasm containing tincture of opium may be applied to the hypogastrium, or an enema consisting of a glass of milk and ten or fifteen drops of tincture of opium is thrown into the bowel; or an enema of chloral is administered; or a suppository of the following constitution is employed:

℞	Extract of opium	. . .	⅓ grain
	Extract of belladonna	. .	½ grain
	Cocoa-butter	. . .	45 grains;

or a hypodermic injection of morphin may be given. Four times daily the patient will take ten drops each of tincture of viburnum prunifolium and tincture of piscidia erythrina. Exalgin also may be tried in doses of from three to five grains, thrice daily. Cannabis indica has also proved serviceable, and from three to five drops of the tincture may be given every hour. In nervous women the bromids will be required, and a tablespoonful of the following may be given twice daily:

℞	Strontium bromid. Ammonium bromid. Potassium bromid.	aa .	1½ drams
	Syrup of orange-peel	. .	10 fluid drams.

Locally, frictions with a calmative liniment may be practised. Thus, take of

Oil of hyoscyamus	. .	6 fluid ounces
Tincture of opium	. .	1 fluid ounce
Camphor Extract of belladonna	aa .	1 dram

Mix.

In the intermenstrual period, local and general applications of electricity may be employed. The general treatment consists in the electric bath, the static spark being applied to the lumbar region for twenty or thirty minutes. Locally, for the week preceding menstruation, faradization of the uterus is practised, and during the remainder of the interval, except in virgins, caustic effects are induced by the intra-uterine application of the cathode.

The curative treatment is surgical, and depends upon the causative condition. It will therefore require, in different cases, progressive dilatation of the cervix, followed or not by curettage and the introduction of a metallic stem (which is permitted to remain for a variable length of time) stomatoplasty, bilateral incision of the cervix, the correction of displacements, the enucleation of fibromata, etc. If conservative measures fail, and if the nervous symptoms persist, it may be necessary to undertake a radical operation, such as removal of the ovaries or vaginal hysterectomy.

Gonorrhœa of the Rectum in Women.—From a study of the records of the City Hospital of Frankfort-on-the-Main, BAER (*Deutsche medicinische Wochenschrift*, 1896, No. 8, p. 116) found that from June 15, 1895, to January 1, 1896, there were admitted to the dermatological department 296 women suffering with venereal diseases. Of this number 105 were syphilitic only, the remaining 191 presenting gonorrhœa, either additionally or exclusively. On careful and systematic examination of these 191 by means of a speculum, whether symptoms existed or not, Gonorrhœa of the rectum was found to exist in 67. In many cases the involvement of the rectum was unattended with special symptoms and objective manifestations. In others there was pain, redness, swelling, sometimes erosion, and discharge. In two cases periproctitis was a complication. The treatment consisted in irrigation of the rectum, once or oftener daily, at first with a three per cent. solution of boric acid, and subsequently with a 1–3000 solution of argentamin. Erosions were touched with a two per cent. solution of argentamin. In some of the latter cases suppository of ichthyol with cocoa-butter were used with satisfaction.

THE MEDICAL NEWS.

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SATURDAY, MAY 2, 1896.

AMERICAN MEDICAL ASSOCIATION—THE MEETING IN ATLANTA.

THE meeting next week seems to offer a veritable feast of good things. The scientific department is well arranged, and the various sections are in good hands. With such leaders of thought as the president, Dr. Beverly Cole; Senn, in surgery; Osler, in general medicine, and Rohé, in hygiene, not to mention the other distinguished names that appear at the head of the various sections, the meeting is destined to be a memorable one. The general outings, in the way of by-excursions, are also attractive, and it is evident that the committee in charge can be depended on to fill the function of social host in a manner gratifying to the most exacting.

The concurrent meetings of the American Academy of Medicine, the Association of Medical Colleges, the Association of Medical Editors, and the Conference of the State Examining and Licensing Boards, is an additional interest of no little importance. As the *Journal* remarks, the former meeting in Atlanta, fifteen years ago, was a "history maker." Unless all signs fail the coming meeting will mark an epoch in the annals of the Association.

PUERPERAL SELF-INFECTION.

OBSTETRICIANS have been occupied during the recently passing years with problems of moment that have brought a new interest to obstetric science and art. Cæsarean section, being made elective, has been put upon the same basis as any other capital operation, with saving advantage to both mother and child. Symphyseotomy has been perfected in its aseptic technic and has taken its place among the accepted operative procedures before which no competent obstetrician hesitates when the indications are present. But brilliant and attractive as these procedures are, they pale into insignificance in comparison with the importance of determining the proper application of asepsis to the parturient woman, in the routine practice of the general practitioner. Cæsarean section and symphyseotomy are the exceptions; normal labor, when not interrupted or hastened by meddlesome interference, is of daily occurrence. What, then, shall be the routine practice regarding asepsis? Before this can be answered satisfactorily, it becomes necessary to look into the underlying principles or processes of infection.

The history of the evolution from the mysticism that surrounded the etiology of puerperal fever into the modern conception of puerperal septicemia is an interesting one; and it is gratifying to recall the debt obstetric science owes to the magic insight of Oliver Wendell Holmes, who first discovered the true nature of puerperal fever.

But obstetrics, like all surgical procedures, must take its teaching from the great principles of sepsis and asepsis. And the cardinal principles that have application here are two: (1) That all inflammatory processes, as indicated by rise of temperature, are of septic origin, and (2) that septic infection is by direct contact, and not atmospheric.

In obstetrics, an effort has been made to establish the principle of auto-infection to account for certain cases of puerperal sepsis, seemingly unaccountable according to the principles above enunciated, and this proposition was based upon the accepted fact that the vagina is the habitat of numberless bacteria. There remained for determination, however, the delicate question as to the virulence or innocuousness of these micro-

organisms and the properties of the vaginal secretions as a culture-medium or a germicide. Upon these two points hinges the entire question of self-infection. And here the students of the subject have ranged themselves in diametrically opposite positions. Dr. Charles Jewett set forth the status of the subject very clearly in his paper, read before the New York State Medical Society and reported in the MEDICAL NEWS of February 1st, and now appearing in full in the *Am. Gynec. and Obstet. Journal* for April. The extreme autoinfectionists maintain that pathogenic microorganisms are always present in the vagina, and in condition to take on virulence when a favorable soil is provided by the decomposing discharges following labor. Every obstetrical patient, therefore is liable to infect herself. The opposing school maintain that pathogenic bacteria do not live in healthy vaginal mucus—indeed, that the normal secretion is fatal to them. This immunity, according to Döderlin, is due to the acid condition of the normal secretions, which acidity he attributes to an acid-producing bacillus. Jewett concludes that the findings of the bacteriologists tend to establish the belief that the vaginal secretion is infectious when diseased, and possibly so in health. But it is well not to forget that the findings of the bacteriologists require confirmation by the clinician.

In the clinical experience of prominent obstetricians, we find the practice which is based upon these extreme views of the bacteriologists, correspondingly at variance; one faction insisting that preliminary and *post-partum* antiseptic douches are indispensable, and the other claiming that such douches are not only useless, but harmful. The middle ground is doubtless the safe one; namely, that the healthy parturient, in the absence of contact infection, is safe against septic disease, and the routine douche is a useless and possibly injurious practice. But when the secretions are pathological, as shown by their alkaline or neutral reaction to litmus-paper test, and in doubtful cases, confirmed by culture test, thorough antiseptic cleansing is indicated and imperative. All this discussion presupposes the acceptance of the most thorough external subjective and objective asepsis on the part of the accoucheur, the nurse and the patient.

BACTERIOLOGY.

THE DETECTION OF TYPHOID BACILLI IN WATER AND IN FECES; ELSNER'S METHOD.

THE usual increase in the number of typhoid fever cases in summer, especially in those occurring at summer resorts, naturally makes a consideration of the means which we now possess, for the detection of the typhoid bacilli, a timely one.

The greatest difficulty in identifying the typhoid bacillus in water and feces arises from its marked resemblance to the common colon bacillus.

It is true that the characteristic typhoid and colon bacilli differ in many important respects from each other, but on the other hand, some typhoid bacilli present many of the characteristics of the colon bacilli, and some colon bacilli those of the typhoid group. This resemblance is so marked that many have been led to suggest that they both belong to the same species, and that one would, under favorable conditions, change into the other. This view is, however, losing ground. The usual differential tests, such as the degree of motility, the number of flagella possessed by the suspected bacilli, the growth in gelatin, in milk, on potato, in media containing sugars and albumins, and their pathogenic action have sufficed, as a rule, to at least strongly indicate that a certain bacillus was either a typhoid or colon bacillus. These tests have not been considered sufficient, however, to absolutely identify them. During the past year, two new additional means have been suggested, which give promise of aiding us in obtaining both bacilli from fluids containing other bacteria, and in surely separating them, one from the other. One of these means, the injection of the suspected typhoid bacilli or colon bacilli into the abdomen of guinea-pigs, along with minute quantities of the serum of animals immunized to typhoid or colon cultures, was treated of last month. If the bacilli, injected with the typhoid serum, were typhoid bacilli, they soon died, leaving the animal unharmed; if, however, they were the colon bacilli they increased rapidly in number, killing the animals.

The specific bactericidal substances developed in animals by repeated injections of the living cultures by Pfeiffer, have since been obtained in suffi-

cient strength to exert their specific power outside the body, and experiments are being carried on to prove the reliability of the results obtained, by noting the specific bactericidal effect upon the bacilli when injected in a quantity of either the typhoid or colon serum kept in the test tube.

The other addition to our means of obtaining the typhoid bacilli from feces or water, and identifying them when obtained, has been furnished by Elsner.[1]

Attempts having failed to obtain typhoid bacilli in pure cultures from mixtures by animal inoculation or to find media in which the growth of the typhoid bacilli would be so increased as to outstrip all other bacteria, Elsner tried to solve the problem by seeking media in which all other bacteria than the typhoid would be more inhibited in their growth than the latter. He tried various media by eliminating or adding different substances before he arrived at one which gave him at least a very marked degree of success.

He made his media as follows: To half a kilogram of chopped potatoes he added one liter of water, and boiled for 1½ hours. After straining through a cloth, ten per cent. gelatin was added. This potato gelatin should have a degree of acidity, such that each 10 c.c. would require 2½ c.c. of a decinormal soda solution to neutralize it. Finally one per cent. iodide of potassium is added and the media is completed. If a stock is to be kept for future use, the potassium iodide should be withheld until shortly before it is to be used.

On this culture medium, nearly all bacteria except the typhoid and colon bacilli, either do not grow at all or are greatly inhibited. The colon bacilli still grow more quickly than the typhoid bacilli, but so differently, that the colonies of the two bacilli can be, as a rule, easily separated. At the end of twenty-four hours, when the gelatin plates are studied with a lens of slight magnification, the colon bacilli are found well developed, while the typhoid are hardly visible at all. At the end of forty-eight hours, the typhoid bacilli appear as small, very finely granular colonies, those of the colon bacilli being much larger, coarser, and more highly colored. The difference in appearance is mainly due to the greater rapidity of growth of the colon bacilli. On plates containing very abundant colonies, those of the colon bacilli may look just like those of the typhoid.

Elsner tried his test practically in separating thirty cultures of typhoid and colon bacilli, and in every case the results agreed with a parallel series, tested by Pfeiffer's bactericidal serum. He found that in water, purposely contaminated with the typhoid bacilli, he could obtain the bacilli when they were present in very small numbers. Thus he put a loop of typhoid bacilli with twenty loops of colon bacilli into two liters of river water. From this, after thoroughly shaking, he took one loopful and again placed it in two liters of fresh water. After shaking, he once again took a loopful and put it into a third two liters of water. From this last water, which represented a dilution of the original culture of 1 to 8000 millions, he obtained the typhoid bacilli. He further examined the stools of seventeen cases of typhoid fever and found the bacilli readily in fifteen. The other two were convalescent cases, in which the bacilli may have disappeared.

From a rather limited experience, I should judge that Elsner has given us a method for the detection of the typhoid bacilli, in suspected feces or water, of great value. By limiting or preventing the growth of most other bacteria, especially those which liquefy gelatin, it allows us to more successfully study the plate cultures, and by causing the differences in appearance of the typhoid and colon bacilli to become more marked, it aids us in separating them. That this method will alone suffice to positively identify the typhoid bacilli, seems to me improbable. Pfeiffer's bactericidal serum test may prove sufficient for this whenever the bacilli are virulent.

WM. H. PARK, M.D.

[1] *Zeit. Hygien. u. Infectionskrank.*, B. 21, H. 1.

ECHOES AND NEWS.

A CERTAIN nervous condition, said to result from excessive use of the bicycle, has been termed the "vibratory habit." Sir Benjamin Ward Richardson has presented the subject before the Medical Society of London, and evidently considers it a disease.

THE Russian Committee of the International Medical Congress, which will be held in Moscow next year, has very courteously reconsidered its determination to exclude English from among the official languages of the meeting.

It is now decided that English will be placed upon the same footing as German and Russian in the reading and discussion of papers, but that French will be used in the transaction of all official business.

AT a meeting of the Philadelphia County Medical Society, held April 15th, a committee was appointed to urge the members of the American Medical Association to favor the holding of a semi-centennial celebration of its organization. The society also instructed its delegates to invite the association to hold the meeting of 1897, which will be the semi-centennial, in the City of Philadelphia.

DR. CHARLES W. STILES has recently received the high honor of being elected corresponding member on Medical Zoölogy of the French Academy of Medicine. Dr. Stiles, although only twenty-eight years of age, has been for the past five years zoölogist of the Bureau of Animal Industry in the U. S. Department of Agriculture, and is recognized as an authority in his particular branch of science.

A PHYSICIAN recently appeared at a medical society with a pocketful of spoons, which he had gathered during his professional rounds, with a view of measuring their capacity. He found them to vary from two-thirds to three times the standard capacity. One spoon held just five times as much as another of the collection. The practical application of these facts is obvious.

DR. SAMUEL HYDE of Buxton, England, writes to the *British Medical Journal* that he has had prepared an extract of fresh articular cartilages and synovial membranes from healthy animals, which he is trying as a therapeutic agent in cases of chronic joint diseases, including rheumatoid arthritis. The apparent analogy between the degenerative changes of the latter and those in other diseases in which animal extracts have proved beneficial, leads him to hope for favorable results in these obstinate affections.

THE RIVERSIDE ASSOCIATION in New York has established, under the direction of Dr. Simon Baruch, a system of baths for the purpose of enabling people in the most moderate circumstances to obtain the benefit of the water treatment. A dispensary practice is the severest test to which any therapeutic measure can be put, and it is proposed by this institution to apply the water treatment to chronic diseases which have resisted other methods. To this end the profession are invited to send any and all dispensary cases of intractable diseases to the Association House, No. 259 West Sixty-ninth street, daily between 2.30 and 4 P.M. The Riverside Association is a chartered body, organized according to the usual methods of dispensary associations, for the purpose of assisting the poor in many and varied directions.

TWO Parisian investigators have found the temperature of the normal human liver to be one degree centigrade higher than the intestines. The normal temperature of the other organs diminished in the following order: spleen, heart, kidneys, brain, muscles, and skin.

THE INSTITUTE PASTEUR, Paris, has just published its report for 1895. The salient feature of the statement appears to be that of 1523 persons treated only 5 succumbed to their injuries. In the fatal cases the symptoms of rabies manifested themselves within fifteen days after the first inoculation; one patient, however, was seized with rabies during the course of the treatment, and has not been included in the figures. A table of statistics contains the figures commencing from 1886, showing that of the 2671 persons treated in that year 25 died, or a mortality of .94 per cent., while in 1895, of the 1523 treated only 2 died, or a mortality of .13 per cent.

DR. ERNEST B. SANGREE of Philadelphia, has been elected professor of pathology and bacteriology in the Vanderbilt University, Nashville, Tenn. Dr. Sangree is at present pathologist to the Philadelphia Hospital, assistant professor of pathology in the Medico-Chirurgical College, adjunct professor of pathology in the Philadelphia Polyclinic, and member of the Academy of Natural Sciences.

THE announcement of the death of Count Mattei brings again to mind the investigation of the quackish methods of this eccentric impostor by a committee of English physicians. Unfortunately, this committee quarreled among themselves, and their report was incomplete. The late Count proposed to cure cancer with preparations of colored water, which he bottled and called electricities, and occasionally he resorted to inert powders for a like purpose.

A NOTABLE and most commendable interest in the study of the natural sciences by comparative methods has simultaneously developed in several American universities. A chair of comparative pathology has just been established in connection with the Medical Department of the University of Buffalo, which will be filled by Dr. Woods Hutchinson. This is the first of its kind in America, but is closely followed by a gift to Harvard of $100,000 from a wealthy merchant of Boston, to establish a similar chair in that institution. The holder of this professorship, who has not yet been selected, will be a member of the Medical School, and devote himself to the study of diseases of both men and animals, with reference to their relationship and cause, as well as to their cure and prevention. No more important indication of scientific progress has marked this last decade of the nineteenth century than this movement to encourage laboratory investigation.

MEDICAL women are now admitted to practise in Austria, under conditions requiring not only a high professional education, but also a blameless moral conduct. In certain provinces their services are in urgent demand for the care of many Mohammedan women, who have heretofore been without medical attention.

AFTER investigating the subject with the thoroughness characteristic of the continental scientists, Professor Wolffhügel of Göttingen, decides that burial in accordance with the general rules practised in America, is not unhygienic. However, the grave should not be opened for thirty years, although complete decomposition often occurs in six. Cremation cannot be considered as a *sine qua non* in ideal sanitation. While discussing this gruesome subject it may be well to mention that a French physician has recently written a book upon the bacteria of dead bodies,

showing that different varieties are present at the several stages of decomposition. In medico-legal practice, it may be of value to thus determine the time that has elapsed since death, which this author claims may be easily done by a study of the "fauna of the cadaver."

MICROBES in milk was the subject of a paper recently presented before the Edinburgh Royal Society. It was found that in winter 24,000 bacteria were the average for each cubic centimeter, and 173,000 in late summer and autumn. Milk from country dairies was found to contain an average of 44,000, while that from cows confined in town averaged 352,000 per cubic centimeter. It was not urged that any or all of these were necessarily virulent. This field should receive thorough attention from our bacteriological laboratories, not only to determine when milk is unfit for food and methods for its sterilization, but also to acquaint the dairymen with the scientific methods of successful butter-making, which is more or less dependent upon the presence of micro-organisms. It is not impossible that discoveries more valuable than those of Pasteur in the process of brewing, may be made in this industry.

UNDER authority of the statutes relating to food and drug inspection, the State Board of Health has examined such samples of diphtheria antitoxin as are offered for sale in Massachusetts, with the following results:

Serum No. 2, Behring. Bottle containing ten cubic centimeters of serum of an advertised strength of 1000 units.

The test showed that the serum was up to the standard.

Serum of Parke, Davis & Co. Bottle guaranteed to contain ten cubic centimeters of a total strength of 1000 units.

The test showed that the serum was up to the standard.

Serum No. 2, of Mulford & Co. The label states that the bottle contains ten cubic centimeters of a total strength of 1000 units.

The test confirmed the statement, and showed the serum to be up to the guaranteed strength.

Serum of the Pasteur Institute of Paris, France (Roux). The circular states that the serum is at least 1–50,000 in strength. As this is considered equivalent to Behring's serum No. 1, the test was carried out with this strength in view. It was, however, found to be weaker than this. A second test showed that the ten cubic centimeters of serum contained a total of 500 antitoxic units, instead of 600 units.

Gibier's diphtheria antitoxin, New York. The label states that the bottle contains twenty-five cubic centimeters, of a total strength of 2500 units. The test showed that the serum was far below this in strength. In a second test, it was determined that the bottle contained from 625 to 750 units, instead of 2500, as advertised. The strength of this serum is thus a trifle below one-half of that of Behring's serum No. 1; ten cubic centimeters of Behring's serum No. 1 contain 600 units.

We understand that the samples were obtained directly from the producers or their agents.—*The Boston Medical and Surgical Journal.*

CORRESPONDENCE.

To the Editor of the MEDICAL NEWS:

DEAR SIR: I have before me a reprint entitled "A New and Rapid Method of Dealing with Intra-ligamentary Fibromyomata," by Dr. W. R. Pryor of New York (MEDICAL NEWS, December 1, 1894), and in justice to Dr. Pryor's original and valuable work in this field, I desire to yield him the credit of using a plan of dealing with intra-ligamentary tumors, in all important particulars, similar to that which I have been using and demonstrating at my clinics at the Johns Hopkins Hospital for a year and a half past (*Johns Hopk. Hosp. Bull.*, February and March, 1896). Dr. Pryor's publication and use of the operation in this important part of the field, antedates my own, and would have received full credit if I had seen it.

He describes very graphically the removal of an intra-ligamentary tumor, and dwells fully upon the great advantage of this way of dealing with them.

He makes also a suggestion, I think, of considerable value, in tying the ovarian vessels on the side last enucleated before tying the uterine vessels.

In my own work, I have almost exclusively adopted a supra-vaginal amputation of the cervix, and I perform hysterectomy in this way for all sorts of myomata as well as for pelvic inflammatory diseases, where drainage cannot be used. If I recollect, the evolution of this operation in my clinic, the design was at first for the rapid enucleation of ordinary myomatous uteri, and the advantages now apparent in the intra-ligamentary forms, were not perceived until a number of other cases had been operated upon. Yours truly,

HOWARD A. KELLY.

BALTIMORE, MD., April 27, 1896.

SOCIETY PROCEEDINGS.

NEW YORK COUNTY MEDICAL ASSOCIATION.

Stated Meeting, April 20, 1896.

THE President, JOSEPH E. JANVRIN, M.D., in the chair.

DR. LOUIS LICHTSCHEIN read a paper on

HYPNOTISM AS A THERAPEUTIC AGENT; ILLUSTRATED.

He said that there was a diversity of opinion as to the correct theory of hypnotism, and that the estimates which different observers formed as to its therapeutic value were largely dependent on the theories which they accepted in regard to the subject. Charcot, to whom the profession was principally indebted for the modern interest in the study of hypnotism, contended that it is an artificial neurosis which can be produced in hysterical persons only. In his view, therefore, its domain was very narrow and the dangers attending it were very great on account of its liability to do serious injury to the nervous system. On the other hand, the Nancy school of hypnotists, headed by Liebault and Bernheim, advocated the theory of simple suggestion, and held that hypnotism was nothing else but persuasion.

Charcot professed to observe three stages: (1) catalepsy, (2) lethargy, and (3) somnambulism; but the truth is that no one outside of Salpétrière had been able to recognize these three stages. The question arose: Are hypnotism and hysteria always associated? which must be answered in the negative. On the contrary, the more sound a brain is, as Forel had shown, the more easily is it affected. The school of Nancy held that every person is more or less susceptible, and Bernheim discriminated no less than nine degrees of hypnotic influence, beginning with somnolence and ending with post-hypnotic, retro-active hallucination. The main point contended for is that there is no hypnotism that is not suggestion. Suggestion, as defined by Bernheim, is an idea which is introduced into the brain and is accepted by it.

After some explanations as to the probable *modus operandi*, in which hypnotism produced its effects, Dr. Lichtschein proceeded to speak of its practical value as a therapeutic agent. In diseases like cancer, tuberculosis, syphilis, etc., when there were serious structural changes, no benefit, he said, could be expected from it. Hynotism was by no means a panacea, but there were many acute and chronic diseases in which suggestion might act in a curative manner. A number of these he referred to. Functional nervous diseases of various kinds were among those most amenable to it. In neurasthenia, however, it was difficult to obtain good results; but with patience and perseverance these could usually be finally arrived at, though considerable time might elapse before a cure was effected. The same was true in regard to hysteria, and hystero-epilepsy. True epilepsy was not affected by it. In facial paralysis, associated with hemiplegia, he had some satisfactory results. Suggestion was a very valuable agent in the treatment of alcoholism, and whatever efficacy there might be in the so-called Keeley cure was no doubt due to this cause. In the morphia habit its application was more difficult, but much could be hoped from it with proper care. In three out of the four cases that he had personally cured he had found it necessary to induce uninterrupted sleep for from ten to twenty days. The chloral habit could also be overcome by it. Hypnotism was of special value in the treatment of nervous asthma, and of neuralgias, especially of the fifth nerve. The peristaltic movements of the intestines could be controlled by it in a remarkable manner, and both diarrhea and chronic constipation (when not due to fermentation) could be cured by it. In anomalies of menstruation, such as profuse menorrhagia, due to mental conditions, it was also of great value. One of the most useful fields in its application was found in masturation and satyriasis, and here it really acted as a specific. In the various forms of perverted sexual appetite, however, it did not offer such good results. In enuresis, by night or day, it was a useful remedy, though it required considerable patience to effect a complete cure.

Dr. Lichtschein thought that no harm could result from the judicious use of hypnotism. In the hands of the inexperienced, however, he believed that it was capable of producing serious injury, as it might cause a shock to the nerves which might eventually unbalance the nervous system. It should be used solely for its therapeutic effect, and only in the way of gentle persuasion. Therefore its practice by lay operators and in public exhibitions should be prohibited by law, as was now the case in Europe and in some of our Western States. He then gave a summary of five cases of different kinds which he had selected from those in which he had effected cures by this agent. In conclusion, he illustrated the various stages of hypnotic influence by means of two trained subjects, a male and a female. In the male the lower degrees were demonstrated, and in the female the higher degrees.

DISCUSSION.

DR. H. ERNEST SCHMID of White Plains, who was present by invitation, said that since he presented his paper on hypnotism before the State Medical Association, five years ago, he had paid much more attention to the psychical phenomena connected with it than to the practical bearings of the subject. As a result of his investigations, he was entirely opposed to the views of Charcot, and accepted those of Bernheim and Liebault. In his opinion, suggestion was the grand factor in the production of the results noted, and not hypnotism itself. He agreed with the reader of the paper that epilepsy had never been influenced by hypnotism. The cases in which cures were reported from it he believed were always instances of hysterical convulsions. He also agreed with Dr. Lichtschein that whatever benefit there was in the Keeley treatment was due purely to suggestion. During the past year or two strenuous efforts had been made to induce the legislatures of Massachusetts and Connecticut to force the medical authorities of the insane and inebriate asylums of those States to introduce this charlatan system into the institutions under their care; but as yet this outrage had not been consummated. It was certainly a curious fact that the State of Massachusetts, with all its boasted enlightenment, should be the first to bring up a bill in favor of charlatanism. The man of all others, he thought, who had been most successful in elucidating the *modus operandi* of hypnotism was Thomas J. Hudson. His idea was that there were two minds, an objective one and a subjective one. The one acted through the five senses, and the other acted by intuition. In this way every act of suggestion could be best explained, the objective mind operating on the subjective mind.

DR. WM. M. LESZYNSKY said it was evident, from the large audience present, that hypnotism had not lost its popularity, even among members of the medical profession. He had come expecting to hear the subject treated in a different manner, and hoped to find that the reader of the paper would say something in regard to the injurious effects of hypnotism. He was willing to concede that this agent had a beneficial influence in a small number of cases seen by neurologists, as, for instance, in some cases of neuralgia, but it was only in a small number. Even in its milder forms, it sometimes acted injuriously, and he had met with a number of such instances. One of these, in the case of a young girl suffering from classical hysteria, he related. Dr. Lichtschein had made the statement early

in his paper that it was not a universal panacea, and yet afterward he had appeared to claim that it really did cure almost everything. In neurasthenia, indeed, he had admitted that the cure took a long time. But in this affection almost any kind of treatment took a long time, and it might well be questioned to what extent any improvement noted was really due to hypnotism. As to facial paralysis accompanying hemiplegia, as the one was due to the same cause as the other, viz.: an organic lesion in the brain, he failed to see how this treatment could benefit one trouble, and yet not affect the other. In insomnia suggestion was no doubt of great value, and the fact was that herein we all practised suggestion on ourselves.

He had no wish to ridicule hypnotism. It was an interesting reality, although we did not as yet understand its phenomena very clearly. Nothing had been shown here to-night which threw any light upon the subject from a scientific point of view. We had all seen such demonstrations over and over again, and, although admitting the honesty of the trained subjects and the good faith of the operator, they proved nothing. All were satisfied, however, that hypnotism has its sphere in therapeutics; but, in his opinion, it was a remedy which could be used in only a few well-selected cases. He did not think that we were justified in making the attempt to hypnotize different patients to see whether they were susceptible to its influence or not. There were, indeed, many persons who, even under the most favorable conditions, could not be hypnotized at all.

In closing the discussion Dr. Lichtschein said that he agreed with Dr. Schmid that epilepsy could not be cured by hypnotism, notwithstanding the claims that had been made by some observers in regard to this point. As to the Keeley treatment, it was simply an abortive attempt at suggestion. The rest of his remarks were devoted to a reply to some of the criticisms made by Dr. Leszynsky.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, April 22, 1896.

The president, Dr. J. C. WILSON, in the chair.

DR. H. A. HARE reported a group of interesting cases. The first was one in which occurred attacks of epileptiform character, that were controlled by a regulation of the diet and the administration of antiseptic and purgative drugs. The second was in a boy, nineteen years old, who suffered from symptoms of digestive derangement and presented rhythmic contraction of both recti abdominis muscles on manipulation of the abdomen. Examination of the gastric contents disclosed the existence of gastric catarrh, with fermentation; and relief of all the symptoms followed lavage and regulation of the diet. The third case was in a boy of nineteen, with aortic obstruction, who presented signs of general peritonitis, with some symptoms suggestive of appendicitis. Operation was undertaken, the incision being made in the median line of the abdomen. The ileum was found obstructed by a band of adhesion, and the appendix inflamed and also adherent. Evidences of general peritonitis were present. The appendix was removed and drainage provided for. When the tube was removed at the end of thirty-six hours, vomiting and other distressing symptoms returned, to disappear upon the introduction of gauze packing. During convalescence, and for some time afterward, the patient suffered from attacks of vomiting and other symptoms suggestive of intestinal obstruction, but improvement usually followed upon regulation of the diet. The fourth case was one of typhoid fever in a man twenty-three years old, in whom a relapse followed the giving of broth and rice after the temperature had been normal for nearly three days.

In conclusion, Dr. Hare added that it was common in his experience with typhoid fever for either recrudescences or relapses to follow the too early ingestion of solid or semi-solid food. It would seem as though the change from a milk diet to other form of food, favored in some way renewed activity on the part of the typhoid, and perhaps other intestinal bacteria.

By invitation of the board of directors, DR. HORACE G. MCCORMICK of Williamsport read a paper entitled

"SOME OF THE THERAPEUTIC USES OF GUAIACOL."

He related that during the past two or three years he has employed topical applications of guaiacol in the treatment of forty-three cases of typhoid fever, in hospitals and private practice, equally divided between the two sexes, and covering wide variations in age. In all, 864 applications were made, the largest number in any one case being 78, the smallest 1; the largest dose was 25 drops, the smallest two. The greatest reduction in temperature was from 108.6° to 101°, with a corresponding reduction in pulse and respiratory frequency. Dr. McCormick has not found guaiacol, employed topically, depressing; on the contrary, with the reduction of temperature, the drug seemed to have a stimulating influence upon a weak heart. One case, that failed to yield to the ice-pack, continued for twelve hours, responded at once to guaiacol. The reduction of temperature effected lasts from three to four hours. At first chills occurred, but these were noted less frequently as experience taught the smallest dose necessary for the antipyretic effect. The applications were usually made in the right iliac fossa, the skin being washed with soap and water, then dried thoroughly, the guaiacol finally being dropped on the surface and gently rubbed in for ten or fifteen minutes. The part was finally covered with oil-silk or wax-paper. In a few cases local irritation resulted from the applications. Otherwise there were no unpleasant effects. Sweating occurred nearly always, and was proportionate to the reduction of temperature. In a case of pyemia with a temperature of 107°, repeated applications failed to bring about a reduction. It was admitted that the pyrexia of typhoid fever is not the disease, but it is an important symptom, and, when pronounced, it demands amelioration. The cold bath is also an efficient means of treating typhoid fever, but guaiacol has the advantage of ease and practicability of application, accessibility, inexpensiveness, freedom from contra-indications and bad effects, and of not arousing the objections of patients and their families. Guaiacol may also be used internally as an intestinal antiseptic, but thus employed, it does not reduce temperature. In cases of typhoid fever, such use is followed by a lessening of tympanites,

moistening of the tongue, and subsidence of delirium. The drug has been given in emulsion and in capsules, but its taste is disagreeable, and guaiacol carbonate may be given instead, in doses of 2½ grains.

DR. J. V. SHOEMAKER stated that he had employed guaiacol, especially in the treatment of such diseases of the skin in which, formerly, it had been the custom to employ creosote and carbolic acid, *e.g.*, superficial epitheliomata, lupus vulgaris, and old ulcers. The remedy has also been employed topically, with success, in the treatment of orchitis and epididymitis.

DR. H. A. HARE pointed out that guaiacol possesses pretty much the same powers and dangers as the coal-tar antipyretics—antipyrin, acetanilid, phenacetin, etc. It is, however, not so useful as the cold bath, intelligently applied. It must be remembered that fever has some protective influence, and may be viewed as the reaction of the organism to the invasion of the disease process. The cold bath does more than reduce temperature. It has, besides, a distinctly vitalizing influence, stimulating in general the functional activities of the organism. Dr. Hare criticised the routine employment of the cold bath, and maintained that this procedure is not to be pursued in every case, but only when other measures prove insufficient. The question is essentially one of dosage, and it is necessary to adapt the treatment to the disease as seen in individual cases.

DR. J. P. C. GRIFFITH contended that it was not possible to properly control the action of guaiacol applied topically as an antipyretic. It is difficult, if at all possible, to determine in advance how many drops of the remedy will be necessary to effect a given reduction in temperature. Experience shows the decline to be too great.

DR. J. M. ANDERS related that, in an extensive experience with guaiacol, he had twice observed its application to be followed by a rise to a point higher than the previous maximum temperature. He had therefore abandoned its use in cases of typhoid fever, and had confined its employment to cases of subfebrile and afebrile disorders. Thus the drug had yielded good results in the treatment of myalgias and neuralgic pains. For this purpose, it was mixed with an equal part of glycerin and painted upon the affected surface. Dr. Anders has found that the hypodermic use of the drug proved even more effective than the topical application, a minim or two of guaiacol being mixed with ten minims of chloroform, and the dose repeated as needed.

DR. FRANK WOODBURY pointed out that the action of guaiacol is probably to be attributed to its absorption into the blood and its influence on the thermic centers. Guaiacol has also proved itself useful in the treatment of pulmonary tuberculosis. It constitutes about sixty per cent. of creosote, which is the best single agent at present known in the treatment of tuberculosis. Carbolic acid and guaiacol do not act alike; the former is far more toxic. On account of its disagreeable taste, guaiacol has been superseded for internal administration by guaiacol carbonate. Under this plan of treatment, it has been observed that hectic is reduced and retrograde changes effected in the morbid process in the lungs.

DR. S. SOLIS-COHEN stated that he had had an opportunity of seeing some of Dr. McCormick's cases, and had come to the conclusion that the patients had passed through a dangerous disease as safely and as comfortably as after any other mode of treatment, Nevertheless, he was unable to agree that the drug should supersede the cold bath. Briefly stated, it is an excellent means of treatment in suitable cases. Guaiacol, internally, is, like salol, an excellent antiseptic, and is capable of controlling the fetor of the stools. For this purpose, the carbonate and the salicylate may also be used. It is a fair question whether the reduction of the temperature in cases of pulmonary tuberculosis by means of applications of guaiacol really does good, and whether the patient is better off for it. The reduction is not permanent, and the applications, to be effective, must be repeated frequently. The matter of personal idiosyncrasy must be taken into consideration, some individuals reacting to a moderate dose, while in others a large dose induces but a slight effect. Applications of guaiacol seem to prevent the growth of the diphtheria bacillus in the throat. Dr. Cohen referred to two epidemics of diphtheria at the Pennsylvania Training School for Feeble-minded Children at Elwyn, in which the outbreak was brought to a close by the topical application to the throats of the healthy children of guaiacol, diluted with fifty per cent. of sterilized olive oil, with the addition of ten per cent. of menthol.

DR. MCCORMICK, in conclusion, replied that he had not observed any increased elevation of temperature after topical applications of guaiacol. The drug is, of course, not without its dangers, as all active medicaments are, but in the hands of the intelligent physician, these are minimal. Whether the application shall be made or not, must be determined in every individual case from the symptoms and general condition. Dr. McCormick repeated that while the fever is not the disease it must at times be treated, whether guaiacol or the cold bath, or other means are used for the purpose.

DR. JOSEPH PRICE read a paper entitled

"RECTO-VAGINAL ANASTOMOSIS AND COMPLETE EXTIRPATION OF THE VERMIFORM APPENDIX."

The thought had suggested itself to him that in some cases of malignant disease of the uterus, with involvement of the bowel and adjacent parts, in which abnormal communications between the viscera are likely to occur, a cleaner and more radical procedure would consist in extirpation of the uterus and intestine, with the establishment of an anastomosis between the bowel and the vagina. He reported the case in which the hysterectomy was effected by the anterior method, incising anteriorly and retracting the bladder, opening the anterior vesico-vaginal pouch and tying backward. After completing the hysterectomy and amputating the diseased bowel, the proximal extremity of the intestine was stitched to the upper extremity of the vagina. The patient made an easy recovery with daily evacuations of the bowels after the fourth day. Dr. Price proposed also, in suitable cases, extirpation of the diseased appendix, cutting the organ out of the head of the cecum, and closing the incised opening with sutures. The operation has proved successful in a number of cases.